National Library
of Canada

Acquisitions and
Bibliographic Services Branch

395 Wellington Street
Ottawa, Ontario
K1A 0N4

Bibliothèque nationale
du Canada

Direction des acquisitions et
des services bibliographiques

395, rue Wellington
Ottawa (Ontario)
K1A 0N4

Your file Votre référence

Our file Notre référence

NOTICE

The quality of this microform is heavily dependent upon the quality of the original thesis submitted for microfilming. Every effort has been made to ensure the highest quality of reproduction possible.

If pages are missing, contact the university which granted the degree.

Some pages may have indistinct print especially if the original pages were typed with a poor typewriter ribbon or if the university sent us an inferior photocopy.

Reproduction in full or in part of this microform is governed by the Canadian Copyright Act, R.S.C. 1970, c. C-30, and subsequent amendments.

AVIS

La qualité de cette microforme dépend grandement de la qualité de la thèse soumise au microfilmage. Nous avons tout fait pour assurer une qualité supérieure de reproduction.

S'il manque des pages, veuillez communiquer avec l'université qui a conféré le grade.

La qualité d'impression de certaines pages peut laisser à désirer, surtout si les pages originales ont été dactylographiées à l'aide d'un ruban usé ou si l'université nous a fait parvenir une photocopie de qualité inférieure.

La reproduction, même partielle, de cette microforme est soumise à la Loi canadienne sur le droit d'auteur, SRC 1970, c. C-30, et ses amendements subséquents.

Canada

UNIVERSITY OF ALBERTA

FORCED TO CHOOSE AND FORCED TO CARE:
TEMPORAL TENSIONS OF 'WOMEN IN THE MIDDLE'

BY

GUY CONRAD GERMAIN

©

A thesis submitted to the Faculty of Graduate Studies and Research in partial fulfillment of the requirements for the degree of MASTER OF ARTS

IN

DEMOGRAPHY

DEPARTMENT OF SOCIOLOGY

EDMONTON, ALBERTA

SPRING 1994

National Library of Canada
Acquisitions and Bibliographic Services Branch
395 Wellington Street
Ottawa, Ontario
K1A 0N4

Bibliothèque nationale du Canada
Direction des acquisitions et des services bibliographiques
395, rue Wellington
Ottawa (Ontario)
K1A 0N4

Your file Votre référence

Our file Notre référence

The author has granted an irrevocable non-exclusive licence allowing the National Library of Canada to reproduce, loan, distribute or sell copies of his/her thesis by any means and in any form or format, making this thesis available to interested persons.

L'auteur a accordé une licence irrévocable et non exclusive permettant à la Bibliothèque nationale du Canada de reproduire, prêter, distribuer ou vendre des copies de sa thèse de quelque manière et sous quelque forme que ce soit pour mettre des exemplaires de cette thèse à la disposition des personnes intéressées.

The author retains ownership of the copyright in his/her thesis. Neither the thesis nor substantial extracts from it may be printed or otherwise reproduced without his/her permission.

L'auteur conserve la propriété du droit d'auteur qui protège sa thèse. Ni la thèse ni des extraits substantiels de celle-ci ne doivent être imprimés ou autrement reproduits sans son autorisation.

ISBN 0-612-11220-9

Canada

UNIVERSITY OF ALBERTA

RELEASE FORM

NAME OF AUTHOR: GUY CONRAD GERMAIN

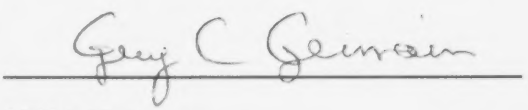
TITLE OF THESIS: FORCED TO CHOOSE AND FORCED TO CARE: TEMPORAL TENSIONS OF 'WOMEN IN THE MIDDLE'

DEGREE: MASTER OF ARTS

YEAR THIS DEGREE GRANTED: 1994

Permission is hereby granted to the University of Alberta Library to reproduce single copies of this thesis and to lend or sell such copies for private, scholarly or scientific research purposes only.

The author reserves all other publication and other rights in association with the copyright in the thesis, and except as hereinbefore provided neither the thesis nor any substantial portion thereof may be printed or otherwise reproduced in any material form whatever without the author's prior written permission.



10614-47 Avenue
Edmonton, Alberta T6H 0B1

22 December 1993

UNIVERSITY OF ALBERTA

FACULTY OF GRADUATE STUDIES AND RESEARCH

The undersigned certify that they have read, and recommend to the Faculty of Graduate Studies and Research for acceptance, a thesis entitled FORCED TO CHOOSE AND FORCED TO CARE: TEMPORAL TENSIONS OF 'WOMEN IN THE MIDDLE' submitted by GUY CONRAD GERMAIN in partial fulfillment of the requirements for the degree of MASTER OF ARTS in DEMOGRAPHY.

Susan A. McDaniel

Dr Susan A McDaniel
(Supervisor)

Leslie Hayduk

Dr Leslie A Hayduk
(Chair)

David J. Whitson

Dr Dave Whitson

1 December 1993

For my mother,

who always knew the value of an education

Abstract

We all experience time and temporal duration differently. To this extent, different cohorts expereince different life rhythms. After briefly discussing social time as a construct, from a historical and sociological perspective, emphasis is placed on summarizing current research knowledge on the consequences of caregiving for women. A LISREL model is then proposed which hypothesizes that there exist certain antecedents of caregiving to a dependent parent, and that such caregiving has negative consequences for the caregiver's life balance, a composite concept which includes satisfaction with leisure time and satisfaction with the balance between one's job and family. The results of the LISREL model indicate that only some of the hypothesized predictors of the caregiving concepts reach statistical significance at the 0.05 level, with the concepts of maintenance, transportation and financial help having the largest number of significant predictors. The explained variance for these caregiving concepts, however, is very small, the largest being only 0.033 for the maintenance concept. Four of the seven predictors of the concept of life balance reach significance at the 0.05 level, and provide a total explained variance 0.07. Surprisingly, caregiving shows no significant relationship with life balance. The interpretations of these results are assessed in light of the cited literature, and some policy directions relating to caregiving are sketched.

Acknowledgement

I have benefited from the insights of a rare committee. This thesis had a long history, and Dr Susan McDaniel possessed the necessary combination of patience and persuasion to allow me to finally reach a stopping point. She granted me the time I took, yet was always able to discuss my ideas in a most stimulating manner. Her efficiency and capability in things both academic and administrative provided a model to which I could aspire. I am still amazed with the rapidity with which she was able to return my drafts, without which I might still be languishing. In countless ways and in innumerable gestures that I can never repay, she brought me through it all.

My theoretical meanderings were aided greatly by the insights of Dr Dave Whitson, who furnished stimulating discussions and sources about the role of leisure in women's lives. Some of the central concepts of the theoretical model were re-conceptualized in profound ways as a result. I am also grateful to him for recommending a slim work by Arthur Frank, whose experiences have better equipped me to relate to others sharing a similar predicament.

Dr Les Hayduk is at once an astute statistician and a tactical theoretician. His presentation and explication of the many facets of LISREL were instrumental in enabling me to bring the thesis to where I wanted it to go. His unflagging attention to minutiae and his persistence in the face of an often obtuse listener provided me with a stimulus for sharpening my theoretical reflections and methodological excursions.

Terry Taerum, of Computing and Network Services, provided valuable help with the LISREL program. In addition, I am thankful to Dave Odynak of the Population Research Laboratory, who assisted with data manipulations and the creation of my two random samples. The department is indeed fortunate to have his expertise.

While it is prosaic to say that one's family customarily has a role to play in endeavors such as this one, I would be remiss if I did not mention the supportive role played by mine. To my wife, Jacinthe and my son, Sebastièn, you provide a center and a gentle warmth which makes accomplishments such as this one all the more worthwhile.

Table of Contents

Chapter 1: Social time as a construct 1

Introduction 1
Thesis outline 2
Time and social psychology: Towards chronosociology 2
Temporal regularity: Duration as a major dimension 3
Socially expected durations: The contribution of Sorokin and Merton 4
Life rhythms: Rigid life patterns decrystallized 5

Chapter 2: Issues surrounding caregiving 7

Historical evidence regarding the strength of intergenerational ties 7
Gender and marital status differences 7
Geographic differentials 9
Other differentials 10
Normative standards, obligations and filial responsibility 11
Exchange relationships 16

Chapter 3: Women in the middle and caregiving 18

Women in the middle 18
Demographic antecedents of the caregiving crisis 19
The conceptualization of caregiving burden 20
Gender matters 21
Age 24
Employment 25
Marital status 26
Living arrangements 27
Some mediating factors: Social support and consanguinity 28
Caregiving and its effect on spouses 29
Characteristics of the care recipient: The level of functional disability 30
Characteristics of the care recipient: Sex of the care recipient 30
The role of formal care services 31
Effects of caregiving: Emotional and mental health consequences 32
Effects of caregiving: Lifestyle and leisure time changes 33
Effects of caregiving: The role of debilitating illness 34
Structures of time and a model of analysis for social time 35

Chapter 4: A structural equation model of caregiving tension 38

Introduction 38
Hypotheses: Influences on caregiving and life balance 38
The data 39
Weighting procedures 40
Questions used in the analysis 41
Why LISREL? 48
Model Description 49

Chapter 5: Results and implications of the basic caregiving model.....53

The model fit.....53
Results of the caregiving tension model.....55
Implications and discussion.....58
Conclusion.....62

Notes.....67

References.....75

Appendix.....84

List of tables

Table 4.1 — GSS variables used in the model 41

Table 4.2 — Data transformations of GSS variables 46

Table 4.3 — Statistics for indicators in the basic caregiving tension model.....47

Table 5.1 — Maximum likelihood estimates for Lambda Y.....64

Table 5.2 — Maximum likelihood estimates for Beta and Gamma (sample 1) 65

Table 5.3 — Maximum likelihood estimates for Beta and Gamma (sample 0) 66

List of figures

Figure 4.1 — A caregiving tension model 52

Chapter 1

Social time as a construct

Years chased away by time
often return
and chase time back again the other way.

— "Time, aging and recollections"
(Germain 1975: 47)

Rapid social and economic change seems to characterize our times. Sometimes it is daunting, in the dizzying pace of change, to discern any patterns or trends. Often, we despair of ever locating the bridges between the past and the future as we scramble to find firm footing in the present, while changes swirl around us. Worry and anxiety about our futures, both individually and collectively, throws us further off balance.

(McDaniel 1992b: 2)

Being a caregiver is doubtless an opportunity, but the dangers of losing herself, her energies and appetites, and her sense of a future may be even greater for the caregiver than for the ill person. As little as we know of illness, we know even less of care. As much as the ill person's experience is denied, the caregiver's experience is denied more completely.

(Frank 1991: 107)

Introduction

Present Western society has been, and continues to be, fixated on the ideas and concepts relating to, and awash in, the implications of time.[1] That we reside in a society and industrial era dominated by time and notions of industrial discipline is evident. 'Time' as a concept of analysis has received a great deal of attention from the natural and physical sciences, and while discourses on time have existed *nearly* forever,[2] the social sciences and humanities have been slower to take up the analysis of time as a variable in itself.[3] This is not to say, however, that time has been absent from indirect and even direct sociological theorizing. Classically, both Durkheim and Mauss explored the 'rhythm of collective life'; Sorokin and Merton were involved in analyzing sociocultural rhythms and periodicities; and Weber and Simmel concentrated on describing the highly rationalized temporal order characteristic of modern cultural life, with the latter focusing especially on cities.[4] In contemporary discussions of caregiving burden, the subject of this thesis, many researchers have speculated about the distinct time rhythms of women (Brody 1981; Gilhooly 1984; Lang and Brody 1983; Lopata and Norr 1980; McDaniel 1992b, 1992c; Myles 1991).

The purpose of this thesis is to investigate the caregiver burdens of what Brody (1981) calls 'women in the middle.' Women are facing increasing strains as caregivers to elderly parents, so much so that Myles (1991) calls this phenomenon the next crisis of the welfare state. This thesis proposes to investigate the extent to which the increasing time that women spend in a caregiving capacity is related to what is conceptualized as *life harmony*. More specifically, it is hypothesized that the more time women spend attending to caregiving duties, especially to their elderly parents, the less time they have available to pursue other interests, and the more dissatisfied they are with the balance between their job

and their family. These and related hypotheses are more thoroughly specified in chapter four.

Lauer (1981: 21) defines social time as the patterns and orientations relating to social processes and to the conceptualization of the ordering of social life. In particular, the concern of the thesis is with 'sociotemporal' order — that which regulates the lives of social entities such as families and complex organizations. Though the 'physiotemporal' and 'biotemporal' orders are to a certain degree natural and inevitable, the sociotemporal order is not, and it possesses a unique subjective quality that clearly demarcates it from the former. This has led to different schools of sociology adopting differing approaches toward the analysis of social and personality structures, with Parsonian functionalism concentrating on continuities, and Marxism focusing on discontinuities.

The sociological concern with time should be the manner in which it is perceived and handled by collectivities. The thesis explores, from a societal context, the manner in which time is perceived by individuals. It is argued that the particular place a person occupies in the nexus of social life (by this it is meant *who* the individual is, whether male or female, young or old, etc) has a pronounced effect on the manner in which they perceive time duration. As Sturt (1925: 141) argues, "...time *is* a concept, and...this concept is constructed by each individual under the influence of the society in which he lives." (emphasis in original) Using data from the 1990 General Social Survey (Cycle five), conducted by Statistics Canada (Statistics Canada 1989), caregiving tension is probed, in part, from a temporal perspective.

Thesis outline

Chapter one briefly documents the emergence of the sociology of time, or chronosociology, and discusses the temporal pattern of duration as a major dimension of time. Focus is placed upon the contribution of Sorokin and Merton's concept of socially expected durations. While these initial sections may not seem directly relevant to the central purpose of this thesis, they are provided as a general orienting overview. This discussion leads into a discussion of time rhythms and the decrystallization of rigid life patterns, particularly in relation to women. Chapter two presents a broad overview of research on caregiver burden, wider demographic antecedents and related issues. Chapter three examines 'women in the middle' more concretely, including a review of the correlates and consequences of caregiving. Chapter four develops and tests a structural equation model of caregiving tension, using LISREL. Chapter five presents the results of the analysis, the inherent implications of the model findings, and a discussion of the results and some policy implications.

Time and social psychology: Towards chronosociology

McGrath and Kelly (1986: 2) state that social psychology has given virtually no attention to time in its theory or research, and that very little research has been conducted on the effects of time pressure at the group or individual level. Social psychology, according to the authors, is guilty of what they call "context stripping strategies," in which "...our current methodological paradigms emphasize research strategies that dissociate the relations to be examined from the context — temporal or otherwise — within which those relations take place." (1986: 2)

One common theme emerging is that time has been taken for granted, and consequently has not been taken seriously by social scientists. Young and Schuller (1988: 3) state that "*The* truism about time is that we take it for granted." (emphasis in original), and that time rarely appears as problematic.[5] Indeed, the authors speak about 'chronosociology' as a distinct field, and share the concern of Zerubavel (1981), who

sensitizes sociologists to temporality, and demonstrates that time should become a special topic of sociological concern. Though Zerubavel claims (1981: x) that no such field as the 'sociology of time' presently exists, the literature on the idea of time, per se, is voluminous, and has had a long history. Sociologists such as Merton have been 'doing' sociology of time for over fifty years. Moreover, The *International Society for the Study of Time* was formed in the late 1960s, and has produced five excellent proceedings from their quadrennial conferences. In addition, the first periodical to focus specifically on the social aspects of time, *Time and Society*, began publishing last year.

Many have claimed that current paradigms mask the importance of time in several ways, with the result that time has been defined away. McGrath and Kelly (1986: 3) posit that time has not been considered a 'real' variable but rather a 'medium' within which subjects exist and events take place. Time, then, is considered as a way of measuring other variables, and not as a parameter interesting in itself. Others have held this view (Bridgman 1932; Sorokin and Merton 1937), and have reasoned that this practice has arisen because social scientists have worked exclusively from a paradigm which has presumed a central role for the processes of equilibrium and adaptation. (McGrath and Kelly 1986: 5) This sounds very much like the model of Parsonian functionalism, which views change as transitory.[6]

Another consensus which emerges in the literature on the sociological study of time is that the precursor of this theoretical ideology is the Newtonian world view, supported by Descartes, Aristotle, and Democritus (McGrath and Kelly 1986; Sorokin and Merton 1937; Derksen 1988). Newtonian time is characterized by uniformity, continuity, infinite divisibility and objectivity. The Heraclitean perspective, a philosophical ontological conception of time, is the opposite, regarding change and process as real, and not as reifications. It is, in contrast to Newtonian time, non material and completely subjective. This latter notion of time was the one used by, among others, Zeno, Kant, Berkeley, Bergson, and James. As well, Sorokin and Merton stated that the psychological concept of time, with its terminology of 'mental age,' and the use of time in economics, was quite different from what was then the prevailing scientific, or 'astronomical' concept of time.

Temporal regularity: Duration as a major dimension

Zerubavel (1981), an important sociologist who focuses on time, has defined four major dimensions of the temporal profile of a situation or event: 'sequential structure,' or order; 'duration,' or how long; 'temporal location,' or when; and 'reference rate,' or how often.[7] To situate this thesis in this specific context, the primary concern of this thesis is with the dimension of 'duration.' An important feature of durational rigidity, as Zerubavel calls the term, is its normative salience, and not only for formal, structured relations, bur also for unstructured, informal relations.

Imbued with temporal regularity is a cognitive dimension — predictability. Zerubavel (1981: 12) argues that the temporal physical regularity of the social world allows us to have certain expectations regarding the physical structure of the environment. That is, it helps us to develop a sense of orderliness. Given its considerable temporal regularity, says Zerubavel (1981: 14), social life can function as a clock or calendar. Moreover, this clock becomes as reliable as any 'natural' clock or calendar.[8] Drawing on the work of Merleau-Ponty, Garfinkel, and Whorf, Zerubavel (1981: 22) states that the temporal regularity of the everyday life world is definitely among the major background expectancies at the basis of 'normalcy' of our social environment, and that this same social environment has cultivated an intolerance toward temporal 'anomalies.'[9]

Thus, it is argued that the concept of 'duration' is highly normatively imbued, and that it is, as Sturt (1925) claims, partially also a subjective experience. This idea of subjectivity is a crucial one, and forms the basis of what Sorokin and Merton (1937) called

'socially expected durations.' An early definition of the 'subjective' nature of duration is given by Sturt (1925: 85), who states that "Even without exact measurements it is common experience that time appears to vary in length according to the nature of the events which occupy it or the state of mind in which we are..." In addition, Bridgman (1932: 97) posited that "...the methods which we adopt for assigning a time to events change when the character of the events changes, so that time may appear in various guises." This preliminary discussion of duration leads inevitably to, and is crucial for, an understanding of the concept of 'socially expected duration,' or SED, developed by Sorokin and Merton (1937).

Socially expected durations: The contribution of Sorokin and Merton

The pivotal paper in the sociology of time which laid the foundation for the theoretical study of time duration appeared in 1937, by Sorokin and Merton. Indeed, in a retrospectus of Merton's sociological contribution, Tabboni (1990: 427-428) states that "...when American social scientists become interested in the subject of time again, they will no doubt take up from where Merton and Sorokin left off..."

Sorokin and Merton were concerned with asking whether such common temporal measures as months, weeks, and days were the most important in studying social dynamics. Most social scientists, said the authors (1937: 615-616), "...have assumed a time, the parts of which are comparable, which is quantitative and possessed of no qualitative aspects, which is continuous and permits of no lacunae." Sorokin and Merton set out to demonstrate that restricting the duration of time to a single concept when analyzing social dynamics was fraught with difficulties.

Sorokin and Merton's contention was that social pulsations were more significant than calendrical reference systems, and that the latter only became significant when meaningfully transformed not only *into* the former, as the authors argued, but also *by* the former.[10] Indeed, the nomenclature of days, months, and seasons, said the authors, were "...fixed by the rhythm of collective life." (1937: 619)

Another important feature of subjective, or qualitative, periods of time is that perception is more important than reality. As they pointed out (1937: 622), "We need hardly remark that we are here not concerned with the *validity* of what is expressed by these beliefs. They are, in any case, *social facts*..." (emphasis added). Thus, the work of Sorokin and Merton, and especially of Merton himself, was firmly rooted in the Durkheimian tradition.

It is thus the 'symbolic' qualities and inequalities, rather than the 'empirical' ones, which are fundamental for an understanding of social phenomena. A disregard of this critical distinction, argue Merton and Sorokin (1937: 628), has been responsible for the unsuccessful "...search for social periodicities based upon the unquestioned adoption of astronomical criterions of time..."[11] Merton especially has developed the concept of SEDs. Merton developed his idea on the basis of a study of Craftown, an industrial community of about 750 working class families which had been set up near New York in 1911 (Tabboni 1990: 431). Merton found that the relationships between residents of the town and their willingness to make friends and engage in leisure activities was directly dependent not upon how long they had stayed in the town, but rather on how long they *expected* to stay.[12] Thus, the expected duration of residency in Craftown was quite independent of the actual residence stay, with respect to influencing certain behaviors. While the theoretical concept of SEDs was grounded in empirical research, Merton has done further theoretical work on the concept.[13]

Merton identified three distinct types of SEDs. The first, which he called, 'socially prescribed durations,' were institutionally supported. The second, 'collectively expected

durations,' involved societal or collective expectations regarding the duration of such events as economic crises. Thirdly, and the subject of this thesis, Merton called 'temporal expectations,' which had as their subject matter interpersonal relations. Tabboni cites several criticisms of Merton's SEDs. In particular, she claims (1990: 432) that Merton failed to take into account the individual dimension, namely, "...by focusing on the social expectations of duration, which is how Merton sees human behavior in relation to time, he largely ignores the sphere of individual experience and that fact that an individual's experience of time is historically conditioned." Secondly, and related, is the neglect of the historical dimension. Tabboni (1990: 433), extending the ideas of the historian Koselleck, argued that SEDs evolve out of an historical process, and that Merton did not fully consider that SEDs are the product of an interaction between expectations and experience. Tabboni concludes, however, that despite these shortcomings, SEDs remain an important research tool for understanding social life, specifically norms and customs.

Life rhythms: Rigid life patterns decrystallized

Related to the contribution of Sorokin and Merton is the work of several researchers who have focused their discussion on life rhythms as they relate to women's lives, a domain which approaches closer to the subject of this thesis. Brody (1981: 472), for example, speaks of the increasing heterogeneity and decrystallization of women's rigid life patterns. Gilhooly (1984) states that unlike most life events (such as the death of a spouse), caregiving, especially of a dementing parent or relative, rarely has a sudden onset. Nevertheless, in a study of the psychological well being of persons supporting a dementing relative, she found that for the majority of supporters it is unexpected. Far from being homogeneous, say Lang and Brody (1983: 194), middle generation women are a heterogeneous group, and may become more so in the future with changing lifestyles.

A more in-depth treatment of this subject was given by Lopata and Norr (1980), whose interviews of a sample of 996 Chicago area women aged 25-54 indicated a gradual movement away from the past rigidities of their life patterns and social role involvements. They surmise that the American social structure is becoming more flexible, and posit that when this is wedded to "individually innovative decisions" to alter social role involvements, womens' life course patterns are decrystallizing. Their discussions of retirement plans and attitudes toward social security, and the implications for social security, education and job training document the trend, they claim, toward *increasing*, as opposed to decreasing flexibility. Their thoughts are worth quoting at length:

> The popular prediction of the mass media that all women will turn to occupational and career involvement at the cost of foregoing or decreasing commitments to marriage and motherhood is based on the assumption that they will inevitably move in that direction, pendulum style, from a prior extreme commitment to the wife-mother-housewife role complex. This study indicates that the current trend toward the decrystallization of life patterns and role involvements of American women will not lead to increased rigidity in a non family role cluster, but to continued differentiation and flexibility (Lopata and Norr 1980: 4).

Though theirs is an American study, their thesis certainly applies to the Canadian scene as well.

Closer to home, Myles (1991) states that at the end of the twentieth century, society faces a crisis of caregiving which he says is a direct result of the "time crunch" now characterizing the female life course. He finds it most remarkable (1991: 83) that "...women continue to provide as much care as they do, often at enormous personal cost. Women turn down promotions, change jobs and work part time in order to meet the needs

of their immediate and extended families."

Two related and excellent papers by McDaniel (1992b, 1992c) address the interface between life rhythms and caring. McDaniel (1992b) states that there is much that is inaccurately dichotomous in discussions of population aging.[14] She asserts (1992b: 13) that there exists a certain sense of tyranny to the deeply embedded notion of career correspondence with chronological age: "If one is expected, or expects oneself, to be at 'X' point on the career trajectory by age 'A', there is a lock-step which can control us, but also affects those who may not accept it." The tyranny affects not just those who consent to be led by it, she says (1992c: 15), but also those who do not. As an example, a woman deciding to take "time off" to have children may be regarded as a "loser" upon returning to the work force because her chronological age does not fit the expected pattern. Our world is filled with strange notions regarding time, such as the one which McDaniel cites, the concept of having "time off to have children." This, she says, must have been devised by someone with no experience with child rearing demands.[15] McDaniel (1992b: 14) highlights the changes in the scripts of our family lives, and her thoughts, paralleling those of Lopata and Norr (1980), are instructive:

> ...the scripts of our lives are more destandardized, more individuated and certainly less securely anchored to age markers than ever before. (...) It might well be that these new pathways could be appropriately labelled bridges over troubled waters. Individuals, employers, the public, and certainly policy-makers have a long way to go to build lives, careers, families, social policies, and our collective futures that are responsive to readjusted realities. Yesterday's life patterns seem insecure bridges to tomorrow.

There remain aspects of the family, she states, hidden in a "black box of the household" that are little examined and understood. One of these aspects, the extent to which the unacknowledged caregiving that women provide to parents affects their sense of time, is the subject of this thesis. She likens the family to a "vertical stretch" which embeds women in the familial responsibilities of competing demands, cluttered nests, intergenerational conflict mediation and a sandwiching of their needs among those of many others (1992c: 8). She posits that various rhythms go unheard:

> The dictates of an internalized social clock seem to rule women's lives. (...) Here again is a tyranny of timing, similar to that of the career, mentioned earlier, whereby women define their success or failure on the family front, not by what they do, but by the timing of family life events. The rhythm heard by women seems to be dictated more by society than by their own individual needs, or by biology. (McDaniel 1992c: 9)

What McDaniel states is to be emphasized (1992c: 13), that while the rhythm of caring is played loud enough to shape women's lives in serious ways, it is a rhythm as yet unheard by sociologists or the state. The present thesis is an attempt to explore this particular caregiving rhythm in a more systematic manner.

Chapter 2

Issues surrounding caregiving

This chapter is a wide ranging one. Its primary goal is to enunciate broad themes surrounding the issue of caregiving. We begin with a brief survey of the historical evidence of the strength of intergenerational ties, and then discuss several topics related to caregiving, including normative standards and obligations regarding caregiving, exchange relationships, role overload of women in the middle, demographic issues and the conceptualization of caregiving burden. The discussion of issues in this chapter sets the background for a more specific discussion of caregiver strain in the following chapter.

Historical evidence regarding the strength of intergenerational ties

There has been a plethora of research on intergenerational relations in the latter part of the 1980s and in the 1990s. Bengtson et al (1990) contend that three trends reflected in research on intergenerational relations since 1980 have been emphasized. One of these is that there has been a considerable and growing diversity in parent-child and grandparent-grandchild relations among contemporary families. A second emerging theme is that there is a need to focus on specific interactional dimensions in examining intergenerational relationships over time; that is, patterns of intergenerational contact may be different from patterns of assistance, expectations or feelings, and these may or may not be related. Third, there has been a growing conceptual and methodological sophistication in research on intergenerational relations and in cumulative theory development, which has been reflected in the emphasis on replicating results and reformulating theoretical explanations.[16]

There is thus much evidence, according to Bengtson et al (1990: 273), to suggest that the popular conception that vertical family bonds have weakened over the past decades is a fallacy. The authors suggest that adult intergenerational relations may indeed be even more salient than in previous eras due to a longer period of what they call "cobiography" between parents, children and grandchildren. As highlighted by Blieszner (1986), recent investigators have confirmed that parent-child interactions are frequent, that adult children provide a great deal of aid and support to parents, that parents often reciprocate this aid and/or support, that both affection and a sense of obligation motivate the relationship between participants, and that these relationships are perceived as generally satisfactory.

Mancini and Blieszner (1989: 279) state that about three quarters of older parents have face-to-face contact with a child on a weekly or semiweekly basis, and when face-to-face contact is not possible, they rely on other methods of staying in touch. Even where geographical distance is great, contact is maintained. A survey of adult children in the US Midwest found that almost 70 percent saw at least one older parent on a weekly basis. The authors also indicate that recent research on a sample of older parents in the southeastern US found that almost half saw a child at least several times a month for task accomplishment reasons, and about two-thirds saw a child at least several times a month for companionship purposes.[17] Examining Canadian data, Chappell (1990) suggests that 96 percent of the elderly have companionship and that 84 percent have confidant relationships. As well, she says that data for Canada has documented that most seniors live close to at least one child.[18]

Gender and marital status differences

Several studies have attempted to document whether sons or daughters have a greater proclivity to interact with their elderly parents. The consensus appears to be that the roles played by sons and daughters are different and gender based, with daughters usually

found to interact more frequently. Bengtson et al (1990), for example, state that daughters tend to have more frequent interactions than do sons, and state further that it is middle aged daughters which have been identified as the more salient kin keepers in regards to both type and frequency of contact. In addition, widowhood brings more frequent contact with children, and unmarried children have more contact with their parents than married children.

This finding is also addressed by Blieszner (1986: 558), who adds that this is a "well-known" finding, and that the increasing complexity of mother-daughter interaction patterns suggests the need to probe the nature and quality of these relationships in more detail than past studies have done. She also states that it has been confirmed that not only married daughters, but also those employed outside the home, contribute fewer hours of assistance to their mothers than those not employed or not married.

A possible shortcoming of this type of research is alluded to by Strain and Payne (1992: 32), who state that research on family and friendship ties has tended to focus on the married and widowed to the neglect of those remaining single or those whose marriages end in separation or divorce. As they contend (1992: 32), "Often the ever-single and the separated/divorced are combined into one group as the 'other' marital status category, an analytical approach frequently made necessary by small sample size..." However, they state that the limited research available suggests that these two groups exhibit both similarities and differences in their social networks and patterns of social interaction. Both separated/divorced females and ever-single females, state the authors, have been found to have larger networks than their male counterparts, with this differential accounted for by both more close kin (including parents, siblings and children) and by more close friendship ties (see also Connidis and Davies (1992) for work on siblings). Separated/divorced females, moreover, appear to feel less isolated from family than separated/divorced males.

Strain and Payne (1992) studied these interaction patterns among elderly Canadians, and concluded generally that the ever single and separated/divorced are more similar than different in terms of selected sociodemographic characteristics. Frequency of in-person contact was obtained for family and friends. Respondents with children were asked how often they saw them, with the response choices being daily, at least once a week, at least once a month, less than once a month and never. Also considered was the composition of the social network as a whole and interactions across the entire network. For those interactions across a network, a composite measure was used to indicate weekly or less than weekly in-person contact with children, siblings and other relatives seen in the last three months and/or with friends. Controlling for age, gender, education, functional disability, self-rated health, number of children and whether the respondent lived alone or not, Strain and Payne (1992) concluded that females and those who live with others report more frequent in-person contact with their children. An interesting social class difference discovered was that ever single professional women appeared to compensate for a lack of interaction with children by increasing their involvement with extended kin and friends while ever single clerical workers did not.

Chappell (1990: 443; 1991), in probing the realm of caregiving, states that daughters provide more "hands-on" and emotional care, while sons are more likely to provide supervision if and when it is needed. Sons will provide care, however, if daughters are unavailable (either because of distance or because none exists). Chappell (1991) studied 1300 seniors 60 years of age and over living in Winnipeg, Manitoba. She found that daughters and sons were likely to be named as primary caregivers by those seniors living alone or with others. Also, daughters were named by more respondents than were sons. She also found that while residential propinquity was a seeming prerequisite to having a brother, extended kin or friends as a primary caregiver, this was not the case for children or for sisters.

Dewit et al (1988: 61) state, similarly, that female children are found to be more supportive of elderly parents than male children. The authors also note that single, divorced and widowed children are expected to simply have more time to interact with elderly

parents than those currently married. This explanation is similar to a major theory called the time-energy budget, used to account for why interaction may increase in the later stages of the life span. It has been suggested by Leigh (1982), among others. This theoretical perspective suggests that during the early years of marriage, there is only a finite amount of time and energy available for close relationships. As time and energy demands for the family of procreation increase, there is less time available for interaction with the extended family. As parental demands decrease, more time and energy become available for interaction with relatives for whom little time was available earlier in the life span. Leigh (1982), using this framework, found that females contacted parents more than males did, but this gender pattern was not true for other types of kin.

Geographic differentials

Many of the research studies on familial interaction have attempted to determine the role played by geographic distance in the frequency of interaction. It appears clear that geographical proximity increases the likelihood of contact between the elderly and their adult children. An important study focusing on physical distance, using Canadian data, was done by Dewit et al (1988). The authors state (1988: 56-58) that several demographic trends, such as the increase in geographic mobility among young adults and the inclination for separate styles of living across all ages, threaten social contact between the elderly and their adult children. Despite this, they maintain that this increasing physical distance created between elders and their adult children does not appear to have substantially altered the *quantitative* dimensions of social contact among proximate children.[19] Dewit et al were concerned with the extent to which the physical dispersion of adult children influences the forms of social contact between the elderly and their children.

Several studies, say the authors, have assessed the impact of geographic distance on one global aspect of social contact — that of the frequency of interaction. The findings generally show that geographic distance is the strongest predictor in samples of both white and black US elderly, when age, sex, marital status, length of residence and income are controlled. The authors state that there is a lack of research, however, investigating the nature of the relationship between physical distance and different forms of contact. For example, they contend that certain forms of contact, such as face-to-face contact and letter writing, have opposite relationships with distance, and may indeed substitute for one another at certain distance points. Thus, "Research that groups various styles of contact into a single composite index loses important information and provides a distorted picture of reality." (Dewit et al 1988: 57-58)

Dewit et al (1988) assessed the influence of physical distance (controlling for other determinants) on selected types of contact including face-to-face, telephone conversations, overnight visits, letter writing and having important conversations. The authors (1988: 60), coming close to theoretically specifying the old adage that "time is money," posit the existence of a "distance continuum." This continuum assumes a relationship with social contact, such that it can be viewed as a function of a set of time/cost constraints, each of which may vary according to a given contact type. That is, any given type of contact will place certain constraints on the elderly individual or adult child involving an investment of time and/or monetary costs.[20] Thus, the authors argue that the expense and inconvenience of travel are the primary factors limiting personal contact between family members not living together, and claim further that the relationship is a function of the demand for a particular type of contact at various distances.

Dewit et al (1988) used a 1983 sample of 454 elderly living in non collective households in London, Ontario, and limited their research to only the two nearest adult children. These children were analyzed separately to reduce the confounding effect of intimacy on physical distance. The dependent variables were the five types of contact described earlier, while the independent variables consisted of several social demographic

variables (described later in this chapter). Both frequency of interaction and geographical distance were measured on an eight point ordinal scale.[21] After checking for nonlinearity and using polynomial regression, the authors found that distance exhibits a clear influence on face-to-face interaction, with only the respondent's health and children's marital status remaining statistically significant.

Dewit et al (1988: 75-76) conclude that physical distance greatly influences styles of social contact (with the relationship being non linear and unique), and that the proximity variable consistently adds approximately 15 percent to the explained variance and represents the strongest predictor variable. There is a certain amount of substitution which exists between contact types across the distance continuum, they claim, and that face-to-face and telephone interaction occur more frequently at proximate distances. Also, socioeconomic status differentials which affect intergenerational contact are a function of physical distance. The authors conclude that proximity has an overriding effect as a constraint on social contact, and thus posit that physical distance may play a more central role in interaction patterns than is suggested by the literature.

In a further analysis of Canadian data, Connidis and Davies (1992) conducted 400 face-to-face interviews with respondents aged 65-92 years of age in London, Ontario. Their research focused on the choice of confidants and companions, and concluded (1992: 116) that although the proximity of older parents to their adult children makes interaction more frequent (citing Dewit et al 1988), contact with children does not seem to be associated with confiding. They maintain, therefore, that geographic proximity of children is not expected to affect the likelihood of confiding in children, though it may increase the likelihood of considering a child a companion.

Other differentials

Apart from geographic distance as a determining factor in the frequency of intergenerational relations, other influences have been demonstrated to be important. Of the many studies employing a host of independent variables in their analyses, only some of these will be discussed in this section.

Class, as well as ethnic and racial differences, have been shown to be important, though the latter is more relevant to American studies. Bengtson et al (1990), in a literature review on families and aging, state that working class children usually have greater contact with parents than white collar children. As well, social mobility has an impact on contact (see Adams 1968 for a dated, but still classic reference). American studies have often posited race and ethnic origins as impacting on interaction. Bengtson et al (1990), for example, found that the literature supports the notion that Hispanics have the highest associational levels, while blacks and whites are quite similar in their interaction (Mitchell and Register 1984 and Mutran and Reitzes 1984 provide confirmation of this).

Dewit et al (1988), in a study described above, found that health status may play a limiting role in contact. They state that intergenerational contact tends to occur in the home of the older parent. Ethnic affiliation is also mentioned as reducing the constraining influence of distance on social contact. While they also state (1988: 62) that no direct measures are available for cultural norms and values as well as for preference for contact, they claim that these influences may be indirectly influenced through ethnicity and education. Dewit et al (1988) also considered income because they posited that it may soften the cost constraint associated with distance and may also shape preferences for type of contact. All of these influences interact such that, for example, elders suffering from poor health, who have non married children, and have children with lower incomes tend to experience higher levels of face-to-face contact (1988: 68).

Leigh (1982), using a time-energy budget framework, analyzed two data sets from 1963-64 and 1968 and arrived at three hypotheses: (1) interaction between parents and grown children increase over the family life-span; (2) interaction between adults and siblings decrease over the life-span; and (3) interaction between adults and more distant

relatives decrease over the family life-span. The independent variables posited to affect kinship interaction included sex, social class, social mobility, geographic proximity, education, rural versus urban residence, strength of norms, degree of kinship propinquity, family life cycle, amount of aid and degree of closeness. He found that monthly and weekly interaction with parents and grown children remained fairly constant, and concluded that interaction with parents and grown children remains generally constant over the family life span. Using regression analysis, he found that the data were generally consistent with previous research. The best predictors, consistent for all types of kin, were affectional closeness (keeping in touch because one enjoys it), geographical distance (negative effect) and receiving or giving aid. Social mobility had some effect on parental interaction, while social class and education generally had no significant effect. Leigh's conclusion (1982: 205) was that people in the later stages of the family life span generally interact with relatives to the same extent as those in the early stages.

Thus, several myths concerning the elderly abound: (1) due to geographic mobility of the US population, most old people live at great distances from their children; (2) because of the alienation of old people from their children, most older parents rarely see their children; (3) because of the predominance of the nuclear family in the US, most old people rarely see their siblings or other relatives; (4) due to the existence and availability of large human service bureaucracies, families are no longer important as a source of care for older people.

Brody (1981: 471) says that the accumulated evidence reveals the strength of intergenerational ties and the continuity of responsible filial behavior, and says that "Unfortunately, though science signed its death certificate, the myth of familial alienation from older people has eluded burial. It is so persistent and pervasive that Shanas has referred to it as a 'hydra-headed monster' (Shanas 1979)." Brody says that several related myths have arisen, including the myth of formal provision (that the formal support system, comprising government and community services, gives the bulk of care to the elderly), the myth of service substitution (that the provision of formal services undermines familial responsibility) and what can be termed the myth of institution dumping (that families repay devotion of elderly parents by abandoning and dumping them into institutions).

Shanas (1979a: 5) says the myth of alienation is the glue holding society together: "...there also seems to be an underlying belief that somehow several generations living under the same roof makes for happiness for older household members, and that the separation of the generations into separate households makes for unhappiness on the part of the older generation." Shanas presents a good summary of the data destroying these and related prevalent myths, and discusses some avenues for research and policy in the wake of these slain myths. A survey of intergenerational ties sets the stage for several related issues surrounding caregiving, beginning with a discussion of normative standards, obligations and filial responsibility.

Normative standards, obligations and filial responsibility

Care, and parent care in particular, has always had a normative component attached to it. One of the great achievements of gerontological research in the last 15 years has been to demonstrate, via numerous well supported studies (Aronson 1985; Brody 1981, 1985; Brody et al 1983, 1984; Cantor 1983; Hooyman and Ryan 1987; Johnson 1983; Rosenthal 1985, 1987; Shanas 1979a; Storm and Storm 1985; Walker 1991) just how normative parent care has become. Brody (1985), for instance, argues that parent care has become a normative but stressful experience for individuals and families and that its nature, scope and consequences are not yet fully understood. She presents historical context and evidence to indicate that having a dependent elderly parent is becoming a normative experience for individuals and is exceeding the capacities of some of them. She says it is *long term* parent care that has become normative (expectable, though usually unexpected). The family, she

says (1985: 21), "...had invented long term care well before that phrase was articulated." She asks the question of whether our social values can come to regard this role as being as satisfactory as the second careers of work, volunteer activities or creative pursuits. Parent care is not a developmental stage, according to Brody, and thus there are no behavioral norms and no simple answer to the question of what adult children should do.

A prevalent myth which has existed in society for some time concerns the belief that there existed a prior "golden age" in which children were far more involved and devoted to the physical and emotive needs of their parents. This issue has been addressed extensively by gerontologists. Brody (1985: 26) says of this that "The irony of the myth is that *nowadays adult children provide more care and more difficult care to more parents over much longer periods of time than they did in the good old days.*" (emphasis in original), yet three quarters of the women she studied said that nowadays children don't take care of their elderly parents as was the case in the good old days. The myth survives, says Brody, because at its heart is a fundamental truth — the *good old days* refers to earlier periods, not in our social history, but to each individual's and family's history to which there can be no return (1985: 26). This call for filial responsibility, says Brody (1985: 27), "...masks social irresponsibility, disadvantaging the elderly and the young as well as the middle generation."

The attitudes of different generations of women have been extensively studied by Brody (Brody 1981, 1985; Brody et al 1983, 1984). Brody (1981), in a study of attitudes toward family care of the elderly, indicated that the vast majority of all three generations of women (grandmothers, mothers, daughters) resoundingly endorsed the traditional value of filial responsibility to the aged. Interestingly, these attitudes were uncorrelated with the amount or type of care needed by elderly mothers or with their own work/non-work status. Strong generational differences, moreover, were apparent, with granddaughters feeling more strongly than the middle generation and much more strongly than grandmothers about something called *grandfilial responsibility*.[22] The wish of older people not to be a burden on their children was also strongly confirmed, with grandmothers more likely to prefer paying a professional to do things for them. Moreover, the preferences of middle generation women for formal providers for instrumental help and financial support meant, thought Brody (1981: 477), that they were feeling "...the pressure of their multiple responsibilities,...and are expressing a wish to spare their own children similar burdens." In regards to gender appropriate roles, the majority of each generation endorsed propositions consistent with the views attributed to the womens' movement. The caveat that Brody extended was that the data spoke of *attitudes*, and not necessarily *behaviors*.

Brody et al (1983), in a study of attitudes of three generations of women, interviewed a non representative sample of 403 Philadelphia area women from 213 families. Responses to 47 attitude statements primarily representing the domains of gender appropriate roles and the responsibility for care of the aged were collected. Over 90 percent of all three generations agreed that taking care of elderly parents is as much a son's responsibility as a daughter's, but the levels of agreement dropped for all generations when filial roles were anchored to concrete tasks. As an example, when asked whether sons should perform the same kinds of household chores as daughters for their elderly parents, levels of endorsement fell to 60 percent of first generation women, 68 percent of second generation women and to 82 percent of third generation women. Fifty-five percent of first generation (but only 22 percent of second generation and 16 percent of third generation) women indicated that professional services can take the place of family care, and a majority of first generation women (but not second or third) thought that they would rather pay a professional than ask family or friends to help, and that old people could get everything they needed if there were enough government programs. Moreover, a majority of each generation felt that adult children should be expected to help their parents with everyday activities, household tasks and financial help if needed. These findings suggested, according to the authors, that receptivity to formal services and expectations of filial

responsibility are not mutually exclusive. The generations were in close agreement that it was better for a working woman to pay someone to care for her elderly mother than to leave her job to do it herself (1983: 603). Interestingly, three-quarters of each generation endorsed the myth of family abandonment of the elderly. There was also little agreement that government programs for older people make children shirk their responsibility. (1983: 604)

In a similar study, Brody et al (1984) found that in general, older people wish to remain independent as long as possible and are reluctant to depend on anyone for financial assistance. They claimed that it is well established that what older people want from their children is affective support; they prefer to live near but in separate households from their adult children and to do so when health and finances permit (often termed *intimacy at a distance*).[23] The authors hypothesized that opinions and preferences relating to filial behavior would differ in relation to the particular kind of help specified, that the different kinds of help would be expected from children than from other providers, and that successively younger generations would be more willing to accept instrumental services from the formal support system.

Using interviews with a non representative sample of 403 Philadelphia area women in one of three lineal positions in residentially proximate matrilines (elderly grandmothers, middle generation daughters, young adult granddaughters), Brody et al (1984) found that in regard to family schedules, large majorities of all generations thought that adult children should adjust their family schedules in order to help their mother, with the youngest women feeling this most strongly. Ninety percent of all three generations expected a non working married daughter to adjust her family schedule. In terms of help with expenses, a large majority of all three generations clearly considered it the responsibility of all adult children to help meet the expenses of professional care for widows, but all three generations were somewhat less likely to expect such help from non working married daughters than from working children. The majority of the two younger generations and a substantial proportion of the oldest generation stated that adult children should *not* adjust their work schedules, with the older women the most likely to feel that all adult children should make this adjustment. All three generations were more likely to expect working daughters than working sons to adjust their work schedules, and found it more appropriate for unmarried working daughters than their married counterparts to make such an adjustment. The questions on sharing a household also produced interesting findings. A majority of each generation recommended that adult children should not share a household with their mother as a solution to their problems, with the youngest the most likely and the middle generation the least likely to favor this solution. If sharing was necessary, however, the youngest women were the most likely to expect non working married daughters and working unmarried daughters to share their household with their mother. In short, those most likely to recommend an adjustment of adult children's work schedules were older, had less income and education, were not working and had no husbands.

Brody et al (1984) also examined preferences for service providers. The child was the first choice of a large majority of each generation for confidante/counselor and of a smaller majority for financial management and grocery shopping. Approximately half of first generation women preferred the child for meal preparation, housework and personal care, and equal or larger percentages of second generation women favored help from formal sources. The most striking difference found was in the area of help with expenses. The child was the first choice of half of the first generation, but of only 14 percent of the second generation and 29 percent of the third generation. The oldest and least educated women were most likely to prefer a child for most services. The authors stated (1984: 745) that the generations were in agreement that male helpers with personal care were unacceptable, and said that this suggests that such tasks will continue to be performed by women, especially in view of the steady feminizing of the oldest and most vulnerable segment of the elderly population.

The traditional perspective that conceives it as natural that families take care of their elderly members when frail or in need has been critiqued by, among others, Aronson (1985). The four particular elements of her critique included 1) the sexual division of labor within the family, 2) the relationship of unpaid labor within the family to womens' position in the labor market, 3) old people's experience of being cared for by the family, and 4) an historical analysis of the nature of family care in the past.

An important contribution has been the idea that suggests it is the ideology of *familism* which is responsible for a large part of the problem. As Cantor (1983: 602) states, the more caregivers feel that family members have a responsibility towards other family members and that involvement in the family is a positive value, the more likely they are to feel strain: "The importance of familism as a predictor of strain suggests that a sense of family and a belief in family cohesion is an underlying dimension in the caregiving situation."

Guberman (1990) offers a variety of reasons for why women assume caregiving, including internalized sex role and filial obligation ideology, external pressures from other family members, material conditions related to the sexual division of labor in the public and private spheres, a lack of options and state practice. She echoes calls for an analysis of women's relation to caregiving which collapses the dichotomy between psychological and structural paradigms. Her comments are instructive (1990: 69):

> The first of these paradigms sees caregiving as women's life work; it maintains that the qualities and characteristics required to care for someone are central characteristics of the female identity and are what distinguishes them from men. To be a woman is to care for others. The second perspective examines the social organization of caregiving in the context of the sexual division of labour.

Hooyman and Ryan (1987) trace the historical development of societal expectations for caregivers and conclude that the normative expectations of caregiving arose in the cult of domesticity during the Industrial Revolution. They state that the primary bind for women is that they are socialized for caregiving roles accepted as natural, but denigrated by our society. They indicate that women who deviate from expectations to provide care often experience ambivalence, inadequacy and guilt, and those who do not make their caregiving duties primary are often defined as deviant. Most women, however, faced with these pervasive societal and professional expectations about caregiving, do not reject their care responsibilities toward the elderly. Many women thus face the catch-22 situation of being forced to choose between performing their caregiving obligations at the cost of financial security or deviating from societal expectations to pursue employment related stability. This is often at the expense of their own physical and emotional well being. As the authors state (1987: 144): "Although the particular constellation of caregiving demands varies by generation, the societal denigration of caregiving serves to perpetuate women's powerlessness throughout their lives." The authors examine the broader context of the binds created by the primacy of womens' caregiving roles throughout their lives, and indicate that "Our society does little to acknowledge that household and caregiving responsibilities constitute at least a full-time job." (1987: 145) They also state that most caregivers of the elderly experience a "support gap," such that they give more support than they receive. Norms also produce other problems, such as the expectation that women are supposed to know automatically how to be long term caregivers; women are then blamed if their older relatives are neglected, abused or institutionalized. Women are indeed expected to "do it all" by juggling the competing demands of marketplace and home. The authors state that this "model of progress," with the multiple demands that it entails, has left many women physically and emotionally exhausted and hidden victims of our social and health care system. Most damaging for women is this double standard: caregiving for women is an expected duty, but for men it is more likely regarded as an unexpected expression of

compassion (1987: 147).

One research area receiving particular attention has been the domain of *kinkeeping*, or the extent to which family members maintain contact with one another. Rosenthal (1985, 1987), for example, has investigated the characteristics of kinkeepers and concludes that kinkeeping activities are normatively defined as women's work, by both men *and* women, and will be performed in the majority of cases by women.[24] In a good summary of intergenerational relations in Canada (1987), she states that 75 percent of all kinkeepers are women. Men are also engaged, she says, but certainly not to the same degree. Many studies have demonstrated the importance of the mother-daughter tie (see the previous chapter for an overview), and Rosenthal (1985) says that women are more likely than men to worry about inadequately meeting kinkeeping duties. The succession of the kinkeeper job from one generation to the next generally seems to descend through the female line, from a mother to one of her daughters (1985; 1987: 332). The family is considered fragile: "People work at family continuity. There comes a time when they realize that it is up to them; it is their turn to take up the torch. People have a sense of the family's fragility and assume responsibility for trying to keep a sense of 'the family' alive in its members." (1985: 972)

Storm and Storm (1985) examined the perceptions and perceived obligations of 20 women from each of four age groups toward care of frail older persons. The results from their non representative sample indicated that the age groups did not differ in their perception of relative obligation, although children were found to be more obligated than either siblings or old friends. Church and government obligations were found to be greater than that of old friends, siblings with poor financial resources, and children with poor financial resources living far away. Interestingly, they found that the sex of the child or sibling made no significant difference. The greater the financial resources, the greater the obligation to assist. In subsequent interviews, the authors found that most subjects felt that family, with the assistance of community agencies, could and should care for the everyday needs of the elderly. Only a few of the subjects made any distinction on the basis of sex in assigning responsibility to family members, but for those who did, daughters rather than sons, and sisters rather than brothers, were described as the natural caretakers. The consensus with respect to meeting financial needs was that children specifically bore the obligation, and if children were unable or unwilling to aid financially, the government should cover the basic financial needs. There was a widespread feeling that with free medicare and pension provisions, reasonable attempts to save and prudent use of money on the part of the elderly, there really should be little need for additional assistance. There was thus a definite responsibility placed on the elder, with no distinction made between the financial obligation of the son or daughter. Interestingly, young adults showed much less awareness of the complexities of conflicting demands, and were more absolute in assigning responsibility to children without mentioning the responsibility of other sources of aid. In terms of psychological aid, the responsibility to remedy this was found to be quite diffuse. Generally, subjects found that modern conditions made it more difficult for children and others to provide assistance. The younger subjects felt that times had changed for the worse in that family ties were weaker and that children were less responsible towards their parents.[25] In addition, older people thought that children should be prepared, if the need arose, to take them in.

The state also plays a part in creating normative expectations toward family care. Walker (1991) examined the relationship between the family and the state in the provision of care to older people. He asked why the family, and female kin in particular, care for older relatives, and on what basis the caring relationship was founded. He concluded, based on a stratified random British sample, that the vast majority of carers accept without question the caregiving role. All carers who were children felt that they were the right people helping, but several respondents qualified their answers by indicating that several other members of the family *should* do more. As Walker states (1991: 100), the nature of

the individual caring relationship depends on the delicate balance between reciprocity, affection and duty: "...choices about who should care for older people are based on rules which derive from stereotypical beliefs about the debts owed by children to their parents and expectations about appropriate gender roles." Walker also asked how the state will influence the provision of care by families. His answer was that the state will employ everything from outright coercion through to the provision of incentives. In most capitalist societies, he opines, it is "...operation of covert forms of power, particularly at the ideological level, that give the state its primary influence over the life world." (1991: 101) The state is a patriarchal state which is both dominated by men and by an ideology of patriarchy. This means, he says, that it has no direct interest in supporting the traditional, or gendered, patterns of caring. He says that the assumption that state intervention would undermine family care has little support in contemporary research, since he found that most people he interviewed preferred existing family help even if home help would have been available. More importantly for our purposes, he states that the idea that the family is a private domain is a myth, as it has been a long standing object of direct and indirect state intervention. At the heart of the process of reproduction, he says, is the hegemony of the ideology of familism. This amounts to compulsory altruism, because evidence shows that rather than carers giving freely, they, as well as older people and social services personnel, have all internalized a powerful ideology of familism (1991: 105-106).

A note should be said here regarding what Cantor (1979) described as the hierarchical-compensatory model, its central hypothesis being that social support and caregiving is expected to come from family, friends and then neighbors, in that order. Cantor (1979) postulated her new model after examining several other theoretical models concerning the operation of informal support systems. Chappell's (1983) contribution was to review the existing literature on social supports and argue for the viability of a peer, intergenerational conceptual distinction in addition to the familial-non familial distinction which was currently so popular. Of particular interest, she said, are the often neglected relationships with non family age peers. The hierarchical-compensatory model has been supported in the literature. Johnson (1983), in a study on the social support of 167 families in the San Francisco Bay area between 1978 and 1981, found that family members were available in serial order and there was little evidence of shared functioning within the kinship network. In addition, support has come from Kaden and McDaniel's (1990) survey in 1982 of 403 elderly in the Waterloo region.

Exchange relationships

Work has also been done in a related area, that of exchange relationships. Bankoff (1983) found that elderly parents play a crucial supportive role for their widowed daughters, and that parents are the single most important source of support gained from the informal social network. No other associate's support appears to be able to compensate for weak parental support as long as parents are still living. This demonstrates how mothers can be important role models for adult children experiencing a crisis. Brody (1981: 472) states that "By now it is conventional psychodynamic wisdom that problems or role changes experienced by one family member affect every other family member. Each person in the family feels the repercussions as the balance of roles and responsibilities changes and shifts occur in the family homeostasis."

Gilhooly (1984), in studying the effect of caring for dementing relatives, says that two life events are often confounded — the need to give care to a dependent relative and the loss through dementia of a companion, confidante or support. Even if studies show marked and negative effects on supporters' morale and mental health, she says, one would not be able to determine which of these two factors had the greatest impact (1984: 43).

Storm and Storm (1985), in a study of women from four age groups, said that the most common reason for regarding children as responsible was reciprocity — the idea that

children, having been cared for by their parent, should return the care. Some older subjects explicitly suggested that if parental care had been poor, children's obligations would be reduced (1985: 82). An extensive study on the relationship between reciprocity and affection was conducted by Horowitz and Shindelman (1983), who conducted 203 interviews with caregivers in New York City (with 65 percent being adult children, eight in ten being women). They were interested in knowing the nature of past and current affective relations between older relatives and their primary caregiver, the extent to which affection and reciprocity serve to motivate initial entry into the caregiving role, the extent to which caregivers perceive older relatives as having provided assistance to them in the past, and the extent to which the caregiver's involvement and experience of caregiving is related to the quality of the affective relationship and the extent of past help received from the older relative.

What the authors found was that the majority of respondents reported relatively close and enjoyable relations with the older relative. Interestingly, however, they noted that such ties were not a necessary precondition for engaging in a caregiving relationship, as 15 percent of the primary caregivers reported being *not very* or *not close at all* to the older relative prior to the latter's illness (1983: 11). While the authors say that providing care appears to draw the particular dyad involved closer together emotionally, at the same time, it makes daily interaction more difficult. Marital relationships, in particular, were found to suffer from the greatest strain as a result of caregiving (1983: 11). The two most frequently mentioned motivations for caregiving were familial obligation (58 percent of all respondents) and affection for the older relative (51 percent of all respondents). The third most common reason cited was reciprocity. Affection and obligation, say the authors, often go hand in hand, but these reasons are not universal, and the caregiving assistance in some cases was offered in the absence of either affection and/or reciprocity. Caregivers do respond with more assistance the more they believe that they had received in the past. This is Johnson's (1983: 383) "store of credits" hypothesis — past behavior on the part of the older relatives act as "credits earned" which can be activated in the caregiving situation. Affective feelings mediated the potential strains of caregiving (17). They say that "Caregiving does not emerge with a life of its own, but takes place within an historical context. Both the aged relative and the caregiver enter the relationship with a history of interactions which may either facilitate or impede the caregiving relative in his/her attempts to fulfill caregiving responsibilities," and further that "The professional who is called in to assist the caregiving dyad needs to be aware of the importance of these past influences if she/he is to adequately address current concerns." (1983: 18)

Now that some discussion has been made of familial expectations and exchange relationships, it is fruitful to talk more specifically about those persons experiencing the greatest caregiving strain, women in the middle.

Chapter 3

Women in the middle and caregiving

In this chapter, several factors related to actual caregiving strain, as identified in the previous research literature, are highlighted. Included among these factors are the age, sex, employment status and marital status of the caregiver, as well as the degree of functional impairment of the care recipient. It is to be noted here that not all of these factors will be included in the subsequent model of caregiving tension. The goal of this chapter and the preceeding one is to list characteristics which have been identified in the literature as specific causes of caregiving burden, especially as they relate to 'women in the middle, ' while at the same time situating these within a broader discussion of issues surrounding the giving of care to primarily elderly persons. The summary of the research outlined in this chapter will serve as the basis for the hypotheses set out in the next chapter.

Women in the middle

Brody (1981) says that two trends have accelerated the aging of the population and the large scale entry of women into the work force have produced a phenomena called "women in the middle." These women are middle aged, in the middle generation and in the middle in that the "...demands of their various roles compete for their time and energy. To an extent unprecedented in history, roles as paid workers and as caregiving daughters and daughters-in-law to dependent older people have been added to their traditional roles as wives, homemakers, mothers, and grandmothers." (1981: 471) She conjectures that many of these women are also in the middle because they experience pressure from two competing value systems, "...the traditional value that care of the elderly is a family responsibility vis-á-vis the new value that women should be free to work outside the home if they wish." (1981: 471) Women in the middle share the situation produced by major demographic shifts and changes in women's life styles, but says that while they have been separately studied extensively, their effect upon each other hasn't been adequately examined. Little research has been conducted on the unique problems of middle aged working women, which Brody says is in striking contrast to the great interest placed upon the situations of young working women (477). She speaks about the role overload of young working women which has been addressed by the popular press and even by professionals, and says that while these concerns are legitimate, "...if young women are not Superwomen, neither are the middle-aged." (477)

Women in the middle are also characterized by unique beliefs, in comparison to the generation above and below them. They were found to be, in a study by Brody et al (1983), consistently middling and divided in attitudes toward formal and informal services. The authors state that this lack of consensus may derived from their Janus faced position of being mothers as well as daughters — they may anticipate their own dependency needs in old age, and thus can relate as both a caregiver and care recipient. Most women who work, the authors state, will continue to be filially responsible, and if so, may be subjected to the same pattern of role overload, conflict and stress as that experienced by young women with respect to work, child care and other responsibilities (605).

Cantor (1983), in a study of New York City caregivers, found that her adult child caregivers were a "generation in the middle," with the potential for considerable stress arising from both personal and situational factors (1983: 599). Rosenthal (1987: 332) indicates that kinkeeping is most commonly done by women in their fifties and sixties, and may represent another responsibility of the "caught generation."

Kaden and McDaniel (1990) surveyed 403 elderly citizens in the Waterloo region, with the purpose of examining the impact of gender on the need for social support, the

reasons for turning to formal support, the amount of formal services used and the amount of informal assistance received. They found support for their argument that formal supports complement existing high levels of family caregiving rather than substituting for informal support. They posit the model or average caregiver as being a middle aged woman, usually a daughter or daughter-in-law, with a family still at home and increasingly, a job in the paid labor force. The authors state that there is yet much to be learned and understood about the full impact of these multiple responsibilities on caregivers. After reviewing a number of studies, they state that the highest levels of caregiving burdens may fall on these women in the middle who have assumed the major responsibility for caregiving (1990: 9). More specifically, "...older wives and middle aged daughters are the most vulnerable segment of the informal support network to being overtaxed by these caregiving responsibilities." (1990: 21) While it is to be acknowledged that formal support is needed by elderly female caregivers who may themselves be in poor health, the authors stipulate that there is now a demonstrated need for assistance to middle aged daughters as well (1990: 23).

McDaniel and Gee (1993) also refer to the caregiving crunch, and state that the caregiving done by women either for pay or out of familial duty is beginning to be regarded as work. Rather than being a private matter, economic constraints added to the growing demand for care have made caregiving a public issue (on the tension between the private and public domain, see Walker 1991). These two approaches come together in what the authors refer to as the "caregiving crunch," and they call this one of the fundamental challenges facing Western societies (see the editorial in Myles 1991).

Women seem to be caught in a double bind, according to McDaniel and McKinnon (1993). Women are more embedded than men in family and friend networks, and this can be a great resource in coping with aging. However, the flip side is that "...the informal support women provide, as spouses, daughters, daughters-in-law, sisters, nieces, friends and volunteers, can leave women with little time, energy or resources to care for themselves and to work outside the home and family." (1993: 95) They state further (1993: 95) that "Women who, by choice or default, spend lives caring for others may face challenges in supporting themselves in their older years and may face health problems associated with the long-term accumulated stresses of unacknowledged caregiving and support." It is this that they refer to as the caregiving crunch.

Notar and McDaniel (1986), in an attempted examination of some of the effects of feminism on relationships between mothers and adolescent daughters in the 1980s, state that one of the earliest and most profound bonds that women form with each other is that of mother to daughter. The sociological perspective accords mothers the most solid and longest lasting woman to woman relationship that daughters experience, a relationship, however, which can sometimes be conflictual in nature (1986: 11). To illustrate, data from Lang and Brody (1983: 199), among other research, underlines the phenomena among women in the middle characterized as "refilling of empty nests" with impaired older people.

Demographic antecedents of the caregiving crisis

What kinds of demographic precursors have given rise to the phenomenon of women in the middle? It is this issue that we turn to next. Myles (1991) states that the next crisis of the welfare state will be the result of the caregiving crunch, and it is already upon us (not the crisis of aging baby boomers). The crisis in caregiving is a result of changes in supply — a dramatic decline in the amount of unpaid working time available to women having traditionally performed caregiving tasks (1991: 82). Brody (1981: 473) reports that while young and single women used to predominate in the work force, the modal category of working women now is the middle aged married woman. In the United States, as an example, 45-64 year old women accounted for the largest increase in the labor force participation by women between 1950 and 1970.

Gee and McDaniel (1992) state that the caregiving crisis is upon us not because of

the increased numbers of older persons living longer, but because of a shortage in the traditional supply of caregivers as more and more women enter the paid labor force. This trend, say the authors, will be exacerbated in the future as the number of younger generation women decline.

Generally, there seem to be two basic demographic antecedents. Lang and Brody (1983: 193) say that the convergence of two major social phenomena, the vast increase in the number of older people and the growing proportion of middle aged women in the labor force, has placed women in the middle in an unprecedented situation with respect to parental caregiving. Middle generation daughters, say the authors (1983: 194) are often caught in a demographic double bind: they are increasingly likely to have at least one parent surviving into old age and to have fewer siblings with whom to share caregiving responsibilities.

The conceptualization of caregiving burden

The research area of caregiving and caregiver burden is plagued by often times contradictory results and confusing definitions. Nowhere is this more apparent than in the conceptualization of caregiving burden itself. The consequences of caregiving have been referred to in the gerontological literature as burden, caregiver stress, problems and adverse effects. Poulshock and Deimling (1984: 230) point out that many studies define and measure burden in diverse ways, making cross study comparisons difficult, and note that definitions of burden have ranged from burden as emotional costs qua feelings of embarrassment and overload to specific changes in caregiver's day to day lives such as disruption of daily routine. Other areas include financial difficulties, role strain and physical health deterioration. As a result of the breadth of issues subsumed under the general term, they say, its use as a unified concept is questionable. Jutras and Veilleux (1991: 41-42) note that the concept of caregiving is very broad, and that ways of conceptualizing the impact of caregiving seem almost as numerous and diversified as the difficulties experienced by the caregiver. They favor the method of triangulation, in which the accumulation of results from different but convergent approaches to examining burden will lead to a sound understanding of the consequences and potential of informal caregiving, and recommend the analytic approach of taking many variables into account simultaneously (which is what the LISREL strategy of this thesis does). The authors even suggest that some previous findings based on univariate statistical analyses or on designs overlooking the influence of extraneous variables, could be reconsidered.

In a similar vein, Kaden and McDaniel (1990: 21) emphasize that the stresses of caregiving are complex, and include physical, emotional and financial strains. Even more "objective" counts of caregiving load, such as daughter estimates of the number of hours of help provided weekly, are problematic, according to Lang and Brody (1983: 198).

As a possible corrective, a growing number of researchers have recognized the utility of using a more precise conceptualization of caregiver burden, particularly by defining burden as either *subjective* or *objective*. Montgomery et al (1985), for example, using structured interviews with a non representative sample of 80 caregivers, defined objective burden as comprising concrete events, happenings and activities. They used a nine item inventory, measuring the extent to which caregiving behaviors had changed nine areas of the caregivers' lives, such as the amount of privacy and time and personal freedom. Subjective burden, conversely, was defined as comprising feelings, attitudes and emotions. They found that while subjective and objective burden were correlated, they shared only 12 percent common variance (supporting Thompson and Doll 1982). No characteristics of the caregiver or care receiver were significantly correlated with objective burden, and only the caregiver's income and age were significantly related to subjective burden. When these two variables were controlled, the relationship of the caregiver to the care receiver and the caregiver's employment status turned out not to be significant

predictors of subjective burden.

Similarly, Thompson and Doll (1982) also used the distinction between subjective and objective burden in a study of 125 families. In terms of objective burden, 73 percent of the families were adversely affected in one or more ways, with 46 percent being moderately burdened and 27 percent bearing severe burden. Thirty percent acknowledged that they had to neglect their responsibilities to other family members, 38 percent said they suffered a financial burden as a result, and 30 percent said that the patient interfered with their family's everyday activities. Subjective burden included such feelings as those of embarrassment. Seventy-four percent of caregivers indicated feelings of being overloaded, 42 percent expressed a feeling of being trapped, and 13 percent experienced intense resentment. The high prevalence of anger and resentment, said the authors, were largely anticipated, and supported several studies in England. Twenty-seven percent of caregivers did wish to insulate themselves from the patient at least to some extent. The subjective and objective burden measures shared just seven percent common variance, and thus the authors claimed that feelings of subjective burden were aroused by factors other than objective burden.

Using a multidimensional perspective, Poulshock and Deimling (1984) attempted to clarify the concept of caregiver burden. They claimed that dividing burden into objective and subjective components has not proven to be satisfactory, as a potpourri of items tend to get subsumed within each category. Their model consisted of burden as a mediating force between elders' impairments and its impact on caregivers, and was based on the assumption that the burdens caregivers experience are the result of their highly personal and individualized responses to the specific caregiving context. They urged, in the case of outcome measures, that the term *caregiving impact* be used in place of *objective burden*. Their three conceptual categories were *elder impairment, burden* (indicated by, for example, sociability, disruptive behavior and cognitive incapacity) and *impact* (indicated by the negative impact on elder-caregiver/caregiver-family relationships and eight items relating to the caregiver's social activity restrictions.[26] Using an Ohio purposive sample of 614 families (50 percent of caregivers being spouses, the rest largely daughters and daughter-in-law), they found that although various measures of burden expressed by the caregivers were correlated, they were not synonymous. This provided support for examining the impact of mental and physical impairment as two versions of the proposed measurement model. Their argument that the concept of burden was related to relatively objective changes in the caregivers' lives, as well as in those of their families, was supported; all measures of both impairment and burden were significantly correlated with the two impact measures. They concluded (1982: 238) that the degree to which burden (as defined by the subjective perception of the caregiver specific to the particular type of elder impairment) operates independently or as a mediating measure is partly a function of the type of impairment and impact under investigation. They thus recommended that the burden concept should be used to refer to the subjective perceptions of caregivers related to the degree of problems experienced in relation to the elders' specific impairments, and that burden, as subjectively interpreted by caregivers, should be treated as an intervening measure between impairment and other more objective indicators of caregiving effects.

Several factors have been identified in gerontological research as being influential in determining not only the amount of caregiving given but also caregiving burden. It is time to examine some of these characteristics, beginning with the obvious and important role played by the sex of the caregiver.

Gender matters

Of all the research conducted on caregiving, no trend has been more clearly established than the fact that caregiving and caregiving burden have become a woman's domain.[27] Reviewed in this section are studies which clearly support the assertion that the

term 'caregiver' is merely a euphemism for 'women' (Brody 1981; Brody and Schoonover 1986; Brody et al 1983; Cantor 1983; Fitting et al 1986; Gilhooly 1984; Hawranik 1985; Hooyman and Ryan 1987; Horowitz 1985; Johnson 1983; Jutras and Veilleux 1991; Kaden and McDaniel 1990; Kinney and Stephens 1989; Lang and Brody 1983; Marcus and Jaeger 1984; McDaniel 1989b; McDaniel and McKinnon 1993; Noelker and Wallace 1985; Reece et al 1983; Robinson and Thurnher 1979; Stoller 1982, 1983; Storm and Storm 1985; Walker 1991). As Brody (1981: 474) comments,

> Belatedly, 'alternatives' to institutional care are now being advocated, the 'natural or informal support system' has been discovered, and the 'family' is being cheered on in its caregiving role. But it has become clear that such words and phrases are only euphemisms for adult daughters (and daughters-in-law), who are the true alternatives.

She goes on to state that while older people look to daughters rather than sons for assistance, this does not imply a lack of responsibility on the part of sons, but reflects rather cultural assignment of gender appropriate roles. Sons, rather than experiencing direct burden, are more likely to experience repercussions through the effects of wives and sisters (an assertion also made by Johnson 1983).

This is reiterated by Horowitz (1985: 612), who says that "[t]o say 'adult children' is usually to mean adult daughters. Every study of family relationships in old age has documented the bias toward the female-linked kinship network.", and further, that "[w]hen the needs of an elder parent grow, the sex of the adult child is one of the most important and consistent predictors of caregiving involvement."

Brody et al (1983), in a study of 403 Philadelphia area women, found that elderly persons depend primarily on women, and that wives, aided by daughters and daughters-in-law, provide care for impaired husbands. It is principally middle generation women who are the main providers of help for widowed older people, and it is they who give the vast majority of personal care and instrumental services and provide a home when needed.

Storm and Storm (1985) in a study of obligations toward caregiving, found that the majority of older subjects interviewed made it clear that, if gender was mentioned at all, women were assumed to be the primary caregiver.

Walker (1991) conducted a unique study of two sides of the caring relationship. His stratified random sample of 306 people aged 75 years and over living in Sheffield, England found that 91 percent of principal informal carers were women in the older person's own family. Fifty-two percent of the older people receiving care had at least one daughter helping, with one in four being helped by a lone daughter. Also, as found elsewhere, the majority of daughters were caring alone, in contrast to sons, who were helped by either sisters or wives. Caregiving can be performed by family members in a variety of combinations, but out of 27 possible two person combinations, Walker encountered 13, the most frequent of which were two daughters, a daughter and a son, and a daughter and son-in-law (1991: 97).

Gender has also been shown to be a strong influence on the *type* of care provided. Horowitz (1985: 612) says that there is a good deal of evidence that daughters predominate as providers of direct services, while sons play a more substantial role in decision making and the provision of financial services. He lists three factors usually cited to explain why daughters have predominated as primary caregivers: (1) the traditional assumption of nurturing tasks, (2) womens' stronger emotional ties to their family of orientation, (3) their more flexible free time in their role as homemakers.

Horowitz (1985) presented findings from a study of 131 adult children identified as the primary caregiving relative to an older parent to examine how sons differentially perform and experience caregiving roles as compared with daughters. Seventy percent of all the adult children originally identified as the primary caregiver were women (and this role clearly extended to daughters-in-law), and 88 percent of the sons identified as primary

caregivers were either only children, children in male only sibling networks, or the only geographically available child. This clearly indicates that most male caregivers tend to become so by default, while this is true for only half of all daughters in a similar situation. He did find that sons were no more or less likely to care for fathers as opposed to mothers, to care for older parents, or to care for parents who were more or less severely disabled. Excepting health care, daughters were significantly more likely to help parents with all services calling for hands on assistance. More importantly, when the task involved was less "gender specific" or tended to be male oriented, sons did not appear to differ significantly in their degree of involvement (1985: 614).

When Horowitz (1985) examined the fulfillment of the family's affective function, what he found was that this was the most common caregiving role for both sons and daughters. He states (1985: 615): "It appears that the universality of this particular caregiving activity places it beyond the influence of stereotypical sex-role behavior." His hypothesis that other formal and informal helpers fill gaps in care whenever a son was the primary caregiver was generally not supported.

Kaden and McDaniel (1990), in a 1982 survey of 403 elderly in Waterloo, found that wives and daughters provided the bulk of the more demanding daily and weekly caregiving assistance, with husbands and sons being more likely to assist with intermittent, sporadic tasks (see also McDaniel 1989b: 146-147). Sixty-four percent of the total assistance was provided by daughters compared to 35 percent provided by sons. This differential widened, however, when heavier and daily and weekly types of caregiving were examined, with daughters providing 87 percent of daily and weekly assistance compared to 13 percent provided by sons. Most of this heavier and regular care was received by mothers (70 percent) as compared to fathers (30 percent). Sons provided more intermittent assistance to parents (56 percent) as compared to daughters (44 percent). The authors sum (1990: 19) by saying that "[t]aken together, the findings...confirm the earlier suggestion that wives and daughters are 'euphemisms' for family caregiving." Further, a study by Robinson and Thurnher (1979) indicated that women were more often involved in providing complete care than were men.

Lang and Brody (1983) conducted interviews with the middle generation of women in a three generation study. Overall, their sample averaged 8.6 hours of weekly assistance. While most daughters viewed themselves as confidantes, only about half of them provided either instrumental assistance or personal care; one-third helped in food shopping, one-quarter provided transportation, and one-fifth helped with laundry, cooking and housework.

Similarly, Stoller (1983), in personal interviews with 753 non institutionalized elders living in New York and their informal helpers, found that daughters provided a larger number of hours of help than did sons. Moreover, the magnitude of difference between sons and daughters varied by task, with the greatest difference being found for food preparation and other domestic tasks, and the smallest difference in the area of financial management and handling personal business. Daughters also evidenced a greater variability in hours of assistance provided, with a multiple regression analysis showing that married daughters provided 20.1 fewer hours per month than unmarried daughters and married sons provided 23.3 fewer hours per month than their unmarried counterparts.

Finally, *burden differences* between male and female caregivers need discussion. The many demographic and social changes occurring has lead to increased burdens for women, say Kaden and McDaniel (1990: 5): "The gender-specific nature of caregiving for the elderly means that the negative aspects of aging and increased social burdens may disproportionately affect women who predominate as both caregivers and care-receivers." Several studies show, the authors say, that male caregivers report less strain than female caregivers. Reece et al (1983: 31) state that even where offspring are the primary caregivers present, spouses and children, when present, are drawn into supporting the caregiver role.

Horowitz (1985) found that many adult children perceived caregiving as a stressful experience, with sons tending to be less negatively affected than daughters. More

specifically, sons were significantly less likely to believe: that they had to give up anything because of caregiving responsibilities; that they had to neglect other family responsibilities; that they had less time for leisure activities; that their emotional state had changed for the worse; and that their plans for the future had been negatively affected (1985: 615-616). Moreover, this was found to be the case even when controlling for the extent of caregiving involvement.

Sadly, Horowitz (1985), like Brody (1981) is not optimistic about the future. She does not think that sons will quickly change their behavior. While she states that sons are not neglectful of their filial responsibilities, she does say that "...the parents of sons are a population at greater risk." (1985: 616) There may be strains involved in providing care under conditions of marital obligation (ie being *forced* to care), she says, and that women's greater vulnerability to strain will place them at a higher risk of burnout unless respite becomes more readily available.

Jutras and Veilleux (1991: 51) found that the impact of caregiving on professional life was greater for husbands than for wives. Kinney and Stephens (1989) examined hassles (the role played by daily caregiving stressors) and uplifts (small caregiving satisfactions). They found that female caregivers who reported more practical and logistical uplifts also reported greater problems in their interpersonal networks and greater depression. The authors (1989: 406) explained this by stating that it was possible that appraisal of events as uplifts reflected a form of coping with an inescapable and chronic stressful situation. Marcus and Jaeger (1984) found in their study that wives experienced greater burdens, despite receiving more help and using confidants more.[28]

Robinson and Thurnher (1979) state that women, especially, experience the constraints in caring for a parent as severe. In their study, though men mentioned having to "stay home at night" or being "tied down on weekends," women were far more likely to perceive the situation as oppressive, perhaps due partly, say the authors, to their higher emotional involvement. They speculate that contact with an aged parent is less rewarding for men than for women and that this results in greater irritability and impatience (1979: 591). Men seldom felt responsible, unlike women, for the emotional well being of their parent, and were also more likely to counsel their wives not to become overly involved with her own mother! Highly interesting is their contention that physicians have been found to play a similar role.

Gilhooly (1984) found that sex of caregivers was significantly correlated with supporters' morale, but not with mental health; males were found to have higher morale than females. She cited three possible explanations for this: (1) that the men in her sample were more involved emotionally with their wives' and mothers' illness than were females; (2) that men were more willing to go out of the house leaving the dependant unattended (ie they were less socially isolated); (3) and that men who reported being more satisfied with life generally were less willing to admit distress (1984: 41-42). Moreover, daughters-in-law gave a great deal of assistance to primary caregivers who were sons, but by comparison, sons-in-law gave little support to daughter primary caregivers.

Hooyman and Ryan (1987) found that women were more likely than their male counterparts to find care demands stressful, and that even when men and women share tasks equally, women are more likely to experience caregiving as burdensome. Men are less likely to feel personally responsible for their parents' emotional well being or to experience guilt from not doing more. Noelker and Wallace (1985: 33) say that differences have been consistently found between spouse caregivers' reports with elderly wives experiencing greater time restrictions, group and social activity restrictions, and negative health changes than husbands.

Age

It is not as readily apparent as it might seem that the older the caregiver, the more

stress and strain is experienced. Some studies have definitely shown that increasing age of the caregiver is associated with increasing burden. Brody's (1981) study highlighted the pressures on middle generation women, with the amount of help given increasing sharply with the age of caregivers. Women 40 to 49 years of age were giving approximately three hours of help weekly, while those 50 to 59 were providing about 16 hours of weekly help, and those 60 years and over were providing about 23 hours of assistance each week. In addition, the older mid life women were, the more likely they were to have their mothers living in their household. Lang and Brody (1983) found that age was the second most salient variable in explaining the variance in amount of help given. Age explained 12 percent of the variance, with older caregivers providing significantly more help than younger ones. Age was found to be a factor in a study by Jutras and Veilleux (1991). They found that if only adult children were considered, age was a definite influence on the burden score.

Kaden and McDaniel (1990), however, point out that some studies have shown that younger caregivers report more strain than older caregivers. To complicate matters, Kinney and Stephens (1989), in their study of hassles and uplifts of caregiving to a demented relative, found that the most satisfaction with care recipients' behavior were reported by *younger* caregivers who had spent more time per day providing care. In addition, Marcus and Jaeger (1984), in their study focusing on elderly spouses and elderly siblings, report that some evidence shows that adult children's satisfaction with living with aged parents rises with the age of both child and parent.

Employment

Many studies have demonstrated the competing demands placed on caregivers who work in the paid labor force. What has generally been found, however, is that women do *not* decrease their caregiving assistance because of paid employment. Horowitz (1985), for example, says that recent evidence indicates that working women do not abandon caregiving responsibilities. Brody (1985), in a discussion of whether work and parent care compete, says that to a certain extent, most definitely. Brody and Schoonover (1986) say that it was often assumed that womens' parent care activities were necessarily reduced when they were employed, but the findings on this are sparse and contradictory. Scattered findings indicate, they say, that women who work continue to help their elderly family members while continuing to meet other responsibilities (1986: 373). Such daughters deal with their multiple responsibilities in a multitude of ways. They found no significant differences, in their non random interviews with three members of each of 150 Philadelphia families, in the number of hours of help received by mothers in two groups of working versus non working daughters. In both work status categories, moreover, the most frequent types of assistance provided were help with shopping, transportation, emotional support, help with managing money and arranging services, and help with housework. While the daughters in both work status groups provided the overwhelming majority of help given for all tasks, the work status of the caregiving daughter was associated with variations in sources of some kinds of assistance.

Stoller (1983) explored the impact of employment and competing familial responsibilities on the level of assistance provided by adult children in responding to the needs of elderly parents. Her study found that for sons, labor force status had the greatest impact of all predictors except marital status on the level of support provided to older parents, with employment reducing assistance by an average of 23 hours per month. For daughters, however, the coefficient for employment was *not* significant. This result, she said, was consistent with recent research suggesting that employed women cope with additional responsibilities of paid employment by lengthening their total work week rather than significantly reducing their non market production. She says that recent evidence suggests that despite increasing labor force participation among married women, few

significant changes in the household division of labor have occurred. Rather than domestic tasks being redivisioned between husbands and wives, the length of the wife's work week has been increased. She says that family caregivers, especially adult daughters, face increasingly complex time allocation decisions. Families have been willing to purchase substitute care, rather than decreasing the time allocated to child care, although the time allocated to the socialization of children may vary less than that of routine chores. She emphasizes that while competing responsibilities may reduce the time allocated to parental caregiving by daughters and sons, they do not eliminate the provision of assistance by adult children (1983: 852).

Cantor (1983) found that the impact of work on caregiving was minimal: "Work per se does not seem to be a reason for relinquishing responsibilities to the elderly, but job performance may be affected by the emotional stress and time pressures involved in providing primary care to a frail older person." (1983: 603) Johnson's (1983) study of 167 San Francisco Bay area families found that the participation of children in caregiving was influenced by the competing commitments that posed impediments to their performing a helping role. The major competing commitments were the demands of their own nuclear families and occupational and social demands. Lang and Brody (1983) report that working women provided half as many hours of help as non working women. Being married and being employed, say the authors, are associated with the provision of fewer hours of help to their elderly mothers. While they say that this seems to operate as competing demands, in a sense "pulling" time away from the number of hours devoted to parent care, they emphasize that "...such findings do not indicate a widespread or significant reduction in parent care by working women, and considerably more research exploration of the issue is needed." (1983: 199)

Some studies have shown that paid employment provides some caregivers with more flexibility in terms of monetary and temporal resources, and thus affords them some relief from caregiver burden. Hooyman and Ryan (1987: 154) state. for example, that a minority of women in higher status professional occupations may possess more income and greater work time flexibility to adjust for caregiving demands. Reece et al (1983: 31) say it is difficult to assess whether working outside the home and still filling the responsibilities of primary care adds to the burdens of caregiving or actually affords a needed respite: "The better incomed caregiver seems to be less negatively affected by their task involvement because of the fact that they do not as often live with the older person. Perhaps the added income allows them the opportunity to buy more services and lessens the necessity to provide some of the more burdensome care."

Jutras and Veilleux (1991) found that adult daughters and sons report similar consequences on their professional lives. Women give more assistance than men, yet do not report experiencing more of a burden. Interestingly, caregivers working outside the home report less of a burden than those who do not. The authors speculate (1991: 51) that it may be the case that those working outside the home score lower on assistance, or that employment offers resources to pay for services, or that their job is considered a respite and offers opportunities for social support. The authors do say, however, that an important caregiver characteristic influencing care is the combining of care with other responsibilities, familial or professional. They cite an extensive US House of Representatives study which found that 20 percent of caregivers studied had to cut back on their working hours, 29 percent had to rearrange schedules, and 20 percent took time off without pay. Those most likely to reduce the number of hours worked were clerical and sales workers. In addition, they found that more wives than husbands had to rearrange schedules, and daughters were more likely than sons to use all three coping strategies.

Marital status

The marital status of the caregiver also has an effect on caregiving. What has

generally been found is that being married (and by extension, cohabiting), compared to being otherwise single (never married, divorced, separated, widowed) is associated with the provision of fewer hours of caregiving. In addition, married caregivers have tended to experience less satisfaction than single caregivers. Mindel and Wright (1982), in studying satisfaction in 99 multigenerational households in a Midwestern US university city, found that marital status had a significant direct effect on caregiver satisfaction, with never married primary caregivers expressing higher levels of satisfaction. Noelker and Wallace (1985) found that married adult children in three generation households reported significantly more negative health changes than did unmarried adult children in two generation households. They stated (1985: 41) that it was quite possible that multiple role demands commonly experienced by caregivers as wife, parent, employee and primary caregiver to an elder parent contribute to a higher incidence of care related stress effects.

Lang and Brody (1983) found that marital status explained nine percent of the variance in the amount of help given by daughters to their elderly mothers, with those daughters who were separated, widowed or divorced providing three times more help than married daughters. Being both married and employed was associated with the provision of fewer hours of help to elderly mothers. These roles, say the authors (1983: 199), seem to operate as competing demands, in a sense "pulling" time away from the number of hours devoted to parent care.

Gilhooly (1984) hypothesized that married supporters (excluding spouses) would cope better and have higher morale and better mental health because of the presence of a confidante. What she discovered, however, was that some of her respondents found having to divide their loyalties a stressful experience.[29]

Of course, being married also goes together, in many cases, with having children. Stoller (1983) found, for example, that the number of children in the household, regardless of their age, was *not* significant in predicting the number of hours of care provided by daughters. Among sons, however, the number of children under six years of age within the household was positively related to hours of assistance given. This suggests, say the authors, a greater assumption by sons of parent caregiving responsibilities when daughters and daughters-in-law are most heavily involved in early child care. There was an absence of significant coefficients, in her study, for the presence of older children. This could be, say the authors (1983: 855), that adult children (and especially adult *daughters*) provide assistance to parents as needed, regardless of the competing demands from their own children.

Living arrangements

Related to marital status, the residence of the caregiver has been shown in several studies to be a factor in influencing both the amount of care given and caregiver burden. Jutras and Veilleux (1991) used shared living arrangements as one of their interactional variables in their random sample of 294 Québec caregivers. They found that those living with the elderly experienced a greater burden than those not sharing the same household, but the relationship disappeared when levels of functional dependency and assistance were controlled. Reece et al (1983) found that joint living arrangements were associated with higher levels of negative impact on the family, and Gilhooly's (1984) study showed that co-resident supporters had lower morale and poorer mental health than non resident supporters.

Lang and Brody (1983) found that living arrangement was the most salient characteristic explaining the amount of help given to elderly mothers by their adult daughters, accounting for 34 percent of the variance. Those sharing households provided *eight* times more help to their mothers than those not sharing households. A regression analysis confirmed that living arrangements were three to four times more powerful than the other three variables used (age, marital status, employment) in predicting the amount of

help given.

Noelker and Wallace (1985: 26) state, however, that findings on adverse effects of caregiving could be an artifact of small or clinical samples typically used in family care research. This could arise, say the authors, where caregiver distress and family dysfunction are generally extant by virtue of the fact that study respondents sought help with the caregiving situation or recently experienced a caregiving crisis. In contrast to many studies, their study involved 600 families representing a distinct type of caregiving arrangement — intrahousehold caregiving. The impaired elders in their study both resided with and received personal care assistance from household kin. Fifty-six percent of the caregivers stated that they did not experience any activity restrictions, financial burdens or disruptions in their family relations as a result of caregiving. The authors state (1985: 34) that focus should be placed on the characteristics of caregivers who cope successfully, saying that the differences may be due to differences in support systems. Similarly, Mindel and Wright (1982) found in their study of satisfaction in multigenerational households, that there was a significant proportion of caregivers who did not experience any undue dissatisfaction.

Some mediating factors: Social support and consanguinity

Besides caregiver and care receiver characteristics, there exist some mediating factors which have been shown to affect or influence caregivers' satisfaction with the caregiving role. Two of the most salient factors are emotional attachment (with consanguinity often being used as a proxy) , and the level or kind of care given. Kaden and McDaniel (1990: 9) say, for example, that the literature suggests that the degree of strain experienced by caregivers is associated with the level of care as well as with the closeness of relationship between the caregiver and care receiver.

The role of consanguinity and attachment, however, is not entirely clear cut. Gilhooly (1984) indicates, for example, that it is not entirely clear the extent to which social support mediates the impact of caregiving on the caregiver's psychological well being. In a review of factors associated with psychological well being of people supporting a dementing relative, she states that it has been demonstrated that the amount of social support received by supporters from family and friends is not associated with psychological well being, but dissatisfaction with help received is associated with low morale and poor mental health. Also, the "distance" in the blood/role relationship (whether spouse/child/other) between the supporter and dependent seems to be correlated with morale and mental health ratings, with the greater the distance, the *better* the supporters' mental health.

Mindel and Wright (1982) studied satisfaction in multigenerational households using an exchange framework analysis, and used consanguinity, dichotomized as blood relative versus non blood relative, as one of their primary caregiver characteristics. While consanguinity had no direct effect on satisfaction, it had a significant indirect effect, which was contrary to their expectation. Having a consanguine was associated with more inconvenience than being an in-law.

Fifty-six percent of family intrahousehold caregivers in a study by Noelker and Wallace (1985) stated that they did not experience either activity restrictions, financial burdens, disruptions in family relationships or health deterioration as a result of caregiving. The authors speculate that caregivers closely related to the care recipient who are able to successfully cope with caregiving demands may have better support systems.

Jutras and Veilleux (1991) conducted a Québec study in which they hypothesized whether kinship is related to caregiver burden. They also questioned whether being the sole caregiver contributes significantly to difficulties related to caregiving, and whether visits to caregivers by other family members makes a difference. They found that the level of assistance provided (ie whether the caregiver is a primary or secondary caregiver) significantly affects caregiver burden, and also that caregivers taking part in personal care

activities of daily living experience greater burden than those who do not. In addition, they found that the global burden experienced by caregivers varies significantly with the relationship between the caregiver and the elderly care recipient, and that primary caregivers experience significantly more burden than secondary caregivers.

Cantor (1983) examined the quality of relationships between caregiver and care recipient, and found that 70 percent or more of all four types of caregivers that she examined felt "very close" to their care receivers. She also found that the type of caregiver and his/her relationship to the care recipient was by far the most important factor in explaining strain, accounting for 37 percent of the total variance. The closer the bond between the two, the greater the amount of strain, with spouses being the group at greatest risk, followed by children, other relatives, and friends and neighbors. She concludes (1983: 601) that "...the concept of centrality, both kinship and functional, clearly relates to the dimension of strain and stress in the caregiving situation."

While it is certainly the case, as Walker (1991: 98) states, that neither affect nor reciprocity are necessary conditions for the provision of practical care or tending, many researchers (such as Kinney and Stephens 1989; Townsend et al 1989) stress that further research should focus on factors predicting variability in caregivers' adaptation over time. That is, it would seem more enlightening, as Noelker and Wallace (1985: 34) think, to focus on the characteristics and resources of successful family caregivers as opposed to studying the negative consequences of caregiving.

Caregiving and its effect on spouses

Caregiving done by spouses of the care recipient, and its consequent effect on the spouse caregiver, has also been examined, and although this issue is not directly examined in the present thesis, it is useful that we examine it briefly here. Spouses are often the main source of support for married persons needing care. Stoller's (1982) study found that married respondents in her sample most frequently mentioned spouses as helpers during illness. Shanas (1979b) reported findings on family care for the elderly in time of illness. The main source of help for bedfast persons was the husband or wife of the invalid, with children both within and outside of the household being the next main source of help. She found that the men in her sample were most often taken care of by wives, while women, who were more likely to be widowed, were taken care of by children.

The effect of caregiving on spouses, however, is less clear, although the prevailing finding seems to be that spouse caregivers experience more burden than adult child caregivers. Cantor (1983: 599) states that spouses are in many ways a high risk group among caregivers. In her New York City interviews of 178 elderly homemaker clients, she found that the household incomes of spouse caregivers were the lowest of all caregivers. Increased age also predisposed them to poor health, and 84 percent of them perceived their own health as fair to poor. She adds that slightly over half of the spouse caregivers in her sample were male, contrary to the common stereotype that caregivers are usually female.[30]

George and Gwyther (1986) studied caregiver well being and found that overall, spouse caregivers exhibited lower levels of well being in all four of her chosen dimensions than adult child caregivers. They were more likely to experience problems with mental health and social participation, as opposed to physical health and financial resources.

Contrarily, however, Johnson (1983) studied dyadic family relationships and found that spouses were more dedicated, with a greater percentage of them accepting their caregiving role without reservations. Jutras and Veilleux (1991), in contrast to some studies, found that spouse caregivers experience the least burden although they provide the most global assistance.

Characteristics of the care recipient: The level of functional disability

Besides characteristics of the caregiver, the kind of care recipient that providers must care for affects morale and satisfaction. Lang and Brody (1983: 194), for example, state that it is generally recognized that certain characteristics of older people (such as health, functional capacity and financial situation) are associated with the amount of help they receive. In their literature review, Kaden and McDaniel (1990) highlight, among others, the role played by the health and income security of the elderly as being factors influencing caregiving burden. In addition, Brody and Schoonover (1986) note that the amount of help provided by caregivers is directly related to the level of the older person's functional disability.

Turning to empirical studies, it has been well demonstrated that increased impairment of the care recipient is associated with increased burden on the part of caregivers. Robinson and Thurnher (1979: 590-591), in a non random study of 49 respondents having living parents, discovered that successful aging on the part of the parent in terms of active engagement or quiet self sufficiency was a source of comfort and reassurance to the child caregiver, especially in the absence of a supportive marital relationship. A gratifying relationship with the parent seemed to largely depend on the relative independence of the parent and the values and cherished lifestyle of the child.

Mindel and Wright (1982) used path analysis to test a causal model of family life satisfaction in multigenerational households, and found that the most important predictors of primary caregiver family life satisfaction were the felt level of inconvenience in living arrangements of the elderly person, and the activity level of the elder. Poulshock and Deimling (1984) also used path analysis, and found a moderate association between elder impairment and corresponding burden reported by caregivers, with cognitive incapacity and activity of daily living impairment demonstrating the strongest associations with corresponding burdens. Unique to their study was the conceptualization of caregiving burden as a mediating force between elders' impairments and the impact on caregivers.

Though some studies focusing on the care of dementing elderly persons have shown that neither the severity nor duration of illness of care recipients is related to caregiver burden, Marcus and Jaeger (1984) found that the poorer the care recipient's health was rated by the caregiver, the higher was the latter's burden score. Jutras and Veilleux's (1991) Québec study showed that caregiver burden varies with the elderly's health status. Among their sample, the less functionally independent was the elder, the greater was the burden score of caregivers.

As with most of the previous noted trends, however, some researchers find conflicting results. Kinney and Stephens (1989) found that caregivers reporting *greater* activities of daily living uplifts (small caregiving satisfactions) were caring for *more* physically disabled care recipients and spent more time per day giving care. They note that other researchers, interestingly, also report positive correlations between the amount of assistance provided by caregivers and caregiver satisfaction.

Characteristics of the care recipient: Sex of the care recipient

Finally, differences in the amount of care given and in caregiver morale have been found to relate to whether the care recipient is male or female, and also to the marital status of the care recipient. Kaden and McDaniel (1990) note, in their literature review, that women are more likely than men to be receiving informal assistance from children.

Gilhooly (1984) states that sex of the dependent is the only dependant characteristic to correlate significantly with supporters' morale, with care of a female associated with higher morale. Gilhooly is puzzled by this finding: "The only 'dependant characteristic' which was significantly correlated with supporters' well being was the sex of the

dependant. It is hard to explain why supporters caring for females should have higher morale than those caring for males." (1984: 41)

Finally, whether care recipients are living with their spouse has been shown to also be relevant. Stoller (1983) found, using a multiple regression analysis, that daughters provided, on average, about 13 hours of assistance per month less to their parent if that parent was living with their spouse. This was the case even when controlling for other predictors. Contrarily, however, the parents' marital status was not significant in predicting hours of assistance given by sons.

The role of formal care services

The accumulated evidence to date appears to suggest that the provision of formal care does *not* replace informal care. Chappell (1985) indicates that the family is still the first resource of choice of both older and younger members for emotional and social support, crisis intervention and bureaucratic linkages. Using a multivariate model (ie a more sophisticated approach than that normally employed), she provided an initial assessment of the issue of formal community services and informal social supports, while controlling for several confounding factors. Chappell conducted structured interviews with random stratified samples of 400 long term users of home care services and 400 non users in metropolitan Winnipeg. What she found was that the users she studies exhibited the same general characteristics as users of formal services noted elsewhere in the literature, ie female, older and widowed. More importantly, formal services appeared not to be substituting for informal services. While users sometimes had fewer social supports available, no difference was found in the level of interaction with these persons observed in comparison with non users. While she noted (1985: 53) that users were significantly different from non users on several important criteria, she found that the data suggested that formal services complement informal care, contrary to the view that the former substitute for the latter. Formal services alone, she says, does not provide sufficient care, as it is the need, rather than the existence of social networks which was more likely to be the basis for the receipt of home care.

Other findings in regard to formal support are interesting. Gilhooly (1984) found that home help service was significantly correlated with morale and mental health, in the expected direction (increased help leading to increased morale). Johnson (1983) found that caregivers other than a spouse are more likely to use formal supports for housekeeping and meal preparation, as these services require immediate proximity on a day to day basis. In addition, husbands as caregivers are more likely to seek the help of formal providers (Johnson 1983; Kaden and McDaniel 1990). A study by Jutras and Veilleux (1991) indicates that two specific tasks seem to increase caregiver burden: interacting with professionals from formal services, and taking part in personal care activities of daily living.

Generally, as indicated by Reece et al (1983), the desire for outside assistance is particularly strong among those experiencing the heaviest burdens, such as lower income caregivers and those in a joint living situation. Noelker and Wallace (1985) found that the highest use of social services was found for divorced or separated adult children with children of their own. Work has also been conducted in the area of normative expectations. As mentioned previously, Storm and Storm (1985), in an examination of obligations regarding care, found in their sample that the obligation of government regarding care was viewed as substantial. Governmental obligation was seen to be more substantial than that of any more personal source of assistance except for children in favorable circumstances.

Effects of caregiving: Emotional and mental health consequences

While many of the deleterious consequences of caregiving have been enumerated above, the next three sections provide a more in depth examination of the negative effects of caregiving. This section focuses on emotional and mental health consequences, while the following two sections deal with lifestyle and leisure time changes and the especially pernicious effects of caring for persons with dementia.

Brody (1985: 22) discusses parent care as a stress, and says that while some caregivers experience financial hardship and declines in physical health, countless studies have identified the most pervasive and most severe consequences to be in the realm of emotional strains. She states that a litany of mental health symptoms arise as a consequence of caregiving, including depression, anxiety, frustration, helplessness and sleeplessness, and cites lowered morale and emotional exhaustion as being related to restrictions on time and freedom, isolation, conflict from the competing demands of various role responsibilities, difficulties in setting priorities and interference with life style and social and recreational activities. One of her most interesting statements (1985: 24) is that excessive caregiving may represent not emotional health or heroism or love — but pathology!

Robinson and Thurnher (1979) conducted longitudinal interviews over five years with 49 respondents having living parents, and found that helping a parent was significantly related to lower morale. Marcus and Jaeger (1984) found in their burden interviews that 63 percent of women and 31 percent of men had high burden scores, and also that caregivers with high burden scores reported fewer visits from family, government organizations and volunteer organizations. Johnson (1983) conducted a non representative study of 167 San Francisco Bay area families between 1978 and 1981, and found that more than 80 percent of caregivers reported that the caregiving role was stressful to them, with half of them describing it as a serious problem.

Hooyman and Ryan (1987: 57-58) state that women are further restricted by their own internalized barriers against letting go of caregiving responsibilities. Women, the authors says, who forego employment and sacrifice personally to provide elder care frequently become depressed and isolated. They say caregivers may feel helpless to control their lives, experiencing a harrowing of their life space. Cantor (1983: 601), similarly, says that it is in the area of personal desires, individuality and socialization that the greatest deprivation occurs: "Most caregivers protect their families and work, but at considerable personal expense to themselves. It is not surprising, therefore, that the greatest strain experienced by caregivers of dependent elderly is in the emotional area."

Poulshock and Deimling (1984) modeled burden as a mediating factor between elders' impairments and impact on caregivers. They found that only caregiver depression displayed any consistent relationship with other measures, but importantly stressed (from a measurement standpoint) that whether depression is viewed as an effect of caregiving or as an antecedent influence is still an open question (1984: 235).

An intimate and moving account of personal experience with life threatening illness is offered by Frank (1991). In describing his encounter with both a heart attack and cancer, he discusses the role of caregivers and underlines the states of denial and affirmation involved in the caring process. As he states (1991: 105), "...neither hospitals in particular nor society in general recognize or support the caregiver. Hospital spaces and schedules are designed to treat diseases; they do not accommodate people trying to sustain relationships while illness is tearing apart their lives." He believes that society does not recognize caring because it has few terms to express the experience involved, and cites this nonrecognition as a direct cause of women's disadvantage: "The caregiver willingly accepts the personal costs of giving time and energy to the ill person. That most caregivers are women makes society's nonrecognition of caring a central cause of women's disadvantage in jobs and career advancement." (1991: 106)

Kinney and Stephens (1989) examined the hassles (the role of daily caregiving stressors) and uplifts (small caregiving satisfactions) of providing care to a family member with dementia. They found that caregivers caring for more physically limited care recipients reported more hassles with activities of daily living tasks. In addition, women found behavioral and cognitive problems of care recipients to be greater hassles than did men. It is interesting that, in general, care recipient characteristics were stronger predictors of hassles, and caregiver characteristics were stronger predictors of uplifts. It is possible, say the authors (1989: 406), that the appraisal of events as uplifts reflects a form of coping with an inescapable and chronic stressful situation, and that perhaps caregivers attended to more positive aspects of giving care, which allowed them to minimize the negative aspects. Clearly, one of the major problems caregivers experience as a result of the demands placed upon them involves emotional strains and some kind of deterioration in mental health. Changes in lifestyle and leisure time, however, are also quite common, and it is the realm of caregivers' temporal balance that this thesis focuses on. Below, a number of studies are outlined which enumerate these problems.

Effects of caregiving: Lifestyle and leisure[31] time changes

Helping frail homebound elders involves not only strain and worry, but also changes and adjustments in lifestyle on the part of the caregiver, says Cantor (1983: 600). The most severe impacts on the caregivers she studied were registered in the areas of free time for oneself, opportunities to socialize with friends, take vacations, have leisure time pursuits, and run one's own house. Stoller (1983: 852) indicates that rather than declining the opportunity to work or avoiding the demands imposed by the emotional bonds to parents and the norms of familial responsibility, daughters respond to the needs of chronically ill or functionally impaired elderly parents by allocating less time to leisure. In her study, the predictor variables explained a greater proportion of the variance in hours of assistance reported by sons than by daughters. This, she says, is consistent with earlier research findings that daughters respond to increased family responsibilities by decreasing their leisure time.

Noelker and Wallace (1985) studied 600 families in which there was intrahousehold caregiving, and categorized seven measures of care related stress effects reported by caregivers into two major types. One type comprised caregiver specific stress effects, and included restricted personal time, decreased involvement in informal social activities, limited participation in group social activities, and negative health changes relating to caregiving. The other type involved caregiving's negative impact on family relationships and on the household, and included elder-caregiver conflict (negative changes in the affective relationship), disrupted family relationships (whether the caregiver felt pressured by multiple roles and whether caregiving had negatively affected relations with family and friends), and financial burdens. What the authors found was that the most severe stress effect associated with caregiving involved restrictions on the caregiver's personal time, followed by caregiver-elder conflict.

Poulshock and Deimling (1984), using a path model, treated caregiver social activity restrictions as a dependent variable, with elder ADL impairment, caregiver depression and ADL impairment burden as the independent variables. All three of the variables were found to have significant direct effects on social activity restrictions, and explained 45 percent of its variance. Hooyman and Ryan (1987) cite two detrimental consequences of the caregiving role for women: structural economic inequality and structural barriers to reentering the paid work force, and claim that married women currently 45-64 have lost an average of 37 percent of potential work years due to work discontinuities.

The biggest cost of caregiving, according to Guberman (1990: 74), is the incessant demand it places on one's time: "...it is neither the physical and emotional labour nor the

guilt which is the hardest burden to bear. The most severe effort of caring for a dependent adult appears to be that it is totally monopolizing and without respite, twenty-four hours a day, seven days a week, 365 days a year." As well, she confirms the impact of caregiving on women's financial autonomy.

As well as having consequences for emotional and mental health, and lifestyle and leisure, caregiving demands are exacerbated when the care recipient suffers from dementia or from a debilitating illness. Many researchers have focused on examining the caregiver burdens of these types of providers (such as Chenoweth 1986; Zarit et al 1986). Below are studies which examine the role of debilitating illness and its effects on caregivers.

Effects of caregiving: The role of debilitating illness

Thompson and Doll (1982: 379) state that many relatives have unwittingly and unwillingly become de facto therapists bearing the burden of coping with a mentally ill family member. They studied 125 families, focusing on the differences between subjective and objective burden, and found that those relatives perceiving kin as currently displaying four or more behaviors considered symptomatic of mental illness or predicting that their kin would need to re-enter hospital in the future were significantly more likely to feel embarrassed, overloaded, trapped and resentful. The same finding was achieved with objective burden, with increased burden related to the patient's psychiatric condition.

Fitting et al (1986) examined spouse caregivers of dementia patients compared on measures of burden, family environment, social networks, psychological adjustment, demographic data and feelings about the dementing illness. Interestingly, female caregivers were more distressed than men, and younger caregivers were lonelier and more resentful of their role than older providers. Pratt et al (1985) surveyed 240 subjects to examine the coping strategies used by caregivers of Alzheimer's disease patients and relationships of those strategies to caregivers' subjective sense of burden. Interestingly, differences in burden scores were not significantly affected by the age, sex, income, education, or patient residence of the caregiver, but they were significantly related to the health status of the caregiver. Three internal coping strategies (confidence in problem solving, reframing the problem, passivity) and two external ones (spiritual support and the presence of an extended family) were significantly related to caregiver burden scores. Kraus (1984) conducted structured interviews with 199 of the key relatives or significant others of 119 elderly persons with dementia living in the Kingston, Ontario area. Nearly 30 percent of significant others reported that disorientation and confusion of subjects was the major problem, and 13 percent considered nutritional aspects to be a problem.

Deimling and Bass (1986) cited research showing that family members providing high levels of care to impaired elders often experience burden and stress. The primary focus of their study was the stress associated with caring for an elder unable to perform activities of daily living or the stress associated with the level of physical care needed by the elder. Their purpose was to determine the direct and indirect effects of primary caregiver's reports of three dimensions of an elder's health (impairment in the level of social functioning, the presence of disruptive behavior, and a traditional measure of cognitive incapacity) on four specific measures of stress experienced by the caregiver. The study rested on the assumption that the level of caregiver stress is partially the outcome of his or her interpretation of the care providing situation.

Deimling and Bass (1986) randomly chose 614 families, stratified by geography, race and generational configuration, and used a path analytic approach. The strongest direct effect on caregiver stress was produced by elder disruptive behavior and elder social functioning. Elder cognitive incapacity did not have a significant direct effect on caregiver stress (but did have substantial indirect effects), and did have a substantial indirect effect on caregiver activity restrictions. In sum, the authors found that while caring for a functionally deteriorated elder doesn't interfere with interpersonal relationships, it may create stress by

limiting the opportunities for social and recreational activities. The authors said (1986: 783-784) that the findings imply that both social functioning and disruptive behavior of the elder should be included in any study of caregiver stress or burden, and also demonstrates the importance of representing caregiver stress by a variety of different indicators.

Structures of time and a model of analysis for social time

The research summarized above has clearly demonstrated that caregivers face a plethora of negative consequences as a result of their role. The assumption underlined throughout is that the more caregiving one performs, the greater the emotional and physical strains involved. One of the particular hypotheses set forth in the following chapter deals with just this idea — that increases in caregiving should lead to decreased satisfaction with leisure time and decreased satisfaction with the balance between one's main activity and family. Below, the notion that increased caregiving leads to decreased disposable time is made more explicit. Following this, a theory of social time use advanced by Lewis and Weigert (1981) is introduced.

Townsend et al (1989) postulated a "wear and tear" hypothesis of caregiving: the longer the care provided, the greater the psychological strain on the caregiver. Their hypothesis was examined via a panel survey, using data from 112 adult children providing interhousehold care to and impaired elderly parent. Contrary to their hypothesis, the data revealed variability in childrens' adaptation to caregiving, with *improvement* rather than deterioration being the norm. In their recursive path model, both subjective stress and perceived effectiveness were significant predictors of changes in depression, with depression not significantly related to the duration of caregiving.

Cantor (1983: 602-603) points out that while the concept of *strain* is a very emotionally laden factor that seems to transcend the amount of direct involvement in caring for a person, "...the more time and effort the caregiver spends in giving assistance, the more likely a resultant disruption and negative impact on personal life are to occur."

Lewis and Weigert (1981) have proposed a paradigm for the analysis of social time. They state that many sociologists do not include time as a crucial variable in their studies, or sometimes only introduce a temporal measure ad hoc. They distinguish between two broad types of social time structures: the biographical-interactional, and the institutional-cultural.

The time corresponding to the biographical structure is "self time." This is time as it appears in the experience of the solitary ego. The authors state that the dimensions of time (ie past, present, future) are imposed on the world by our minds. Heidegger claimed that there were four dimensions of time: past, present, future and what he called "nearing nearness," which connects the past and future to the present. This dimension orders the experience of events in the past and the future as being either near or remote, depending on what is taken as "present": "Just as objects appear differently depending on their spatial nearness, events also appear differently when they are temporally near than when the 'same' events are temporally distant." (Lewis and Weigert 1981: 436) Associated with this is what is known as "temporal panic," which is a reaction to nearing time which is approaching faster than the person's ability to finish the present act requires.[32] Self time, unlike physical time, is not homogeneous. Events in life which are quite distant in physical time may be represented in consciousness as vividly as memories of something which occurred five minutes ago. This, say the authors, is closer to spatial time, or Sharron's (1982) "spaced" time.

"Interaction time," conversely, depends upon the actions of others as well as on the prevailing rules which govern appropriate "turns" in interaction.[33] An important term discussed by the authors is "time embeddedness," which means that all social acts are temporally fitted, or nested, inside larger social acts. Time embeddedness may be "tight" (having to leave due to a different appointment), and this "tightness" varies by social class

and age group and is closely associated with one's image of the future.

Institutional and cultural social time structures, on the other hand, are macro level and are embedded within one another. Within the institutional realm, "organizational time" emerges, in which separate organizations construct their own time schedules which extend only to individual members within that organization. Cultural structures also exist, however, which extend to all members of society. Days and seasons, for example, are cyclic and recur in endless cycles, unlike organizational time, which operates in a linear fashion "...in which persons and objects pass through temporal frameworks that are non repetitive or repetitive at irregular intervals." (Lewis and Weigert 1981: 438)

A further distinction made is that between physical and social biographies. The living being controls the former, with its experiences of being born, growing old, and dying. Social time, however, regulates the latter. The fact, say the authors (443), that we are physically mature before we are defined as social adults creates a lack of correspondence between our two biographies:

> This lack of correspondence between the two biographies places teenagers and young adults in our society in an awkward and ambiguous position. In a way, herding large numbers of these persons into colleges provides an appropriately ambiguous environment where they may be conveniently stored during a psycho-social moratorium until, it is hoped, their two biographies are synchronized.

This example illustrates the concept of "synchronicity," which works as a mechanism for making rationality of human action and planning possible.

In addition, "stratification" is necessary because of the existence of time embeddedness. Different times are not all equal, and this is most clearly seen in the organizational arena. Usually, say the authors, organizational time demands precedence over interaction time, which demands precedence over self time. There are thus a multiplicity of time structures, all stratified, and all demanding synchronicity.

Lewis and Weigert (1981) use these concepts and this theoretical structure to propose a set of theoretical propositions which are capable of guiding research in the area of social time. It appears to be one of the first attempts at a formal theoretical synthesis, and thus may prove very useful. The first proposition outlined by the authors (1981: 452) is

> 1 The greater the number of temporally embedded events between two points in physical time, the shorter is the perceived temporal distance between the points.

An example of this is embodied in the often noted perception that having many events in on day makes the day "go by" faster.

The next two propositions (1981: 453) appear self evident:

> 2A The greater the interdependence of actors, the greater the necessity for temporal synchronization.
> 2B The degree of difficulty in temporal synchronization is a positive exponential function of the number of timetables involved.

In addition, Lewis and Weigert (1981: 455) state two corollaries of proposition two:

> 2.1 As synchronization advances, smaller and smaller units of physical time become socially meaningful.
> 2.2 As perceived scarcity of physical time increases, perceived control of events in one's life decreases. This sensed loss of control

> eventually leads to anxiety, depression, feelings of role incompetence, and similar psychological symptoms of temporal panic.

A last proposition (1981: 454) states that

> 3 Social times are stratified in a particular hierarchy. From the highest priority to the lowest are cyclic time, institutional time, organizational time, interaction time, and self time.

Lewis and Weigert (1981) claim that these propositions may serve as a model of social time, by which various issues in the study of time may be empirically validated. it appears that the propositions have the function of serving as a guide to investigations in social time, and more particularly to investigations of intergenerational interaction and well being. The model proposed in the next chapter investigates a concept of *time panic*, and is more concerned with *interaction* time as opposed to *self* time. While not capable of directly testing any specific tenets of Lewis and Weigert (1981), it nevertheless incorporates some of the theoretical ideas embodied in their propositions, especially those relating to time embeddedness.

Chapter 4

A structural equation model of caregiving tension

Introduction

The measurement and analysis of caregiving, as the foregoing chapters have demonstrated, has had a long history. Presently, the topic has gained increasing popularity because of the profound effects that aging populations may have on many aspects of the social environment.[34] This chapter presents and describes a LISREL model of caregiving tension, and the implication structure of this model is explored using the 1990 General Social Survey, conducted by Statistics Canada.

Hypotheses concerning antecedents of caregiving and life balance are presented first, followed by a detailed discussion of the data used in this analysis. Subsequently, a discussion of and justification for the particular analytical strategy chosen, structural equation modeling, is presented, followed by a description of the basic caregiving tension model as given in Figure 4.1. A summary of the results of the model run, as well as the inherent implications, are presented in the following chapter.

Hypotheses: Influences on caregiving and life balance

Flowing from the research findings which have been outlined in the previous chapter, a model of caregiving tension is proposed which posits certain antecedents of caregiving, which caregiving influences a concept conceptualized as *life balance*. More specifically, the following hypotheses are proposed:

H1 — Sex: It is hypothesized that being female results in more time being spent on caregiving duties relating to housework and personal care, while being male results in more time spent on caregiving duties relating to maintenance and financial help. It is hypothesized that sex has no effect on the amount of transportation provided, nor any direct effect on life balance.

H2 — Age: It is hypothesized that age should have a positive effect on the amount of housework, maintenance and personal care provided, but not on the amount of transportation and financial help provided. Age has no posited direct effect on life balance.

H3 — Education: Since education (along with income) is acting somewhat as a proxy for socioeconomic status,[35] it is hypothesized that education should have a positive effect on life balance.

H4 — Income: In this study, it is hypothesized that income should have no effect on any of the caregiving measures except financial help, with which it is posited to be positively associated. However, it is hypothesized that the greater one's income, the greater one's satisfaction with their life balance.

H5 — Hours worked: It is hypothesized that the number of hours worked operates in a similar manner to that of income — the number of hours worked should have no effect on the amount of

housework, maintenance, transportation, personal care and financial help provided. It is hypothesized, however, that the number of hours worked has a direct negative effect on life balance.

H6 — Living alone: It is hypothesized that if a person lives alone, they will provide more caregiving assistance (except financial help) than if they live with anyone else. In addition, it is theorized that living alone should be positively associated with life balance.

H7 — Household size: It is hypothesized that the greater the household size, the fewer of all types of caregiving duties excepting financial help should be provided by respondents. No effect of household size on life balance is expected.

H8 — Parent residence: It is hypothesized that parent residence will have a strong negative effect on the amount of the first four types of caregiving provided.[36] No relationship is expected between parent residence and financial help. In addition, parent residence will have a negative relationship with life balance. That is, increased caregiving demands of those respondents who are living with one or both parents should be clearly reflected in decreased satisfaction with temporal balance.

H9 — Parents together: It is hypothesized that those respondents whose parents are living together should perform fewer of all types of caregiving. In addition, whether one's parents are living together should have no direct effect on one's sense of life balance.

H10 — Volunteer: It is hypothesized that increased volunteering indicates fewer competing role demands. It is hypothesized that the more time spent volunteering, the greater will be that individual's satisfaction with life balance.

H11 — Caregiving: It is hypothesized that the amount of time spent performing housework, maintenance, transportation, personal care and financial help all determine the caregiving concept. Alternatively said, no other components except those mentioned contribute to the caregiving concept. More importantly, the amount of caregiving one performs is hypothesized to have a strong negative effect on life balance.

The data

The General Social Survey is an annual survey conducted by Statistics Canada, whose principal goal is to gather data on various social trends and policy issues. Each survey is composed of a core set of questions on a specific theme, with some themes repeated in different years. The core theme of the 1990 edition of the survey was *family and friends*, and was composed of a series of questions on family relationships, fertility history and intentions, detailed caregiving given and received, life satisfaction and socioeconomic characteristics.

The 1990 version of the GSS was the first nationally representative survey to address caregiving history, including detailed questions on household help shared by persons living together, household help given and received by persons not living in the

household, and both physical and emotional support given and received.[37] Its large sample size of over 13,000 also gave it high discriminating power, making it suitable for conducting more detailed analysis of several variables simultaneously. In addition, it directly asked questions regarding various areas of life satisfaction, including some questions on temporal balance, related to one of the key theoretical domains found in the literature. For these reasons, it was thought that performing a LISREL analysis using this data set would prove to be an effective strategy for investigating claims concerning caregiving burden.

The target population for the survey was all persons fifteen years of age and over, residing in Canada. Residents of the two territories and residents institutionalized full time were excluded. Telephone data collection took place from January to March 1990. Two different random digit dialing sampling procedures were used in the survey design, and thus two different weighting procedures had to be used. Part of the sample is obtained from the labor force sample. The final sample comprised 18,300 households, from which 13,495 individuals responded.

Since the interest lies in examining only those individuals with either a living mother or father, the analysis was performed for only these individuals. The final number of such respondents was 8723. In addition, it was decided to take advantage of the very large sample size by splitting this sample in half. There are three principal justifications for doing this, including replication, taking advantage of sampling variability and to ease in testing model modifications. This procedure resulted in two random samples of 4346 (sample 1) and 4377 (sample 0). All of the basic runs were conducted on sample 1. Listwise deletion of missing cases reduced the case base to an effective N of 3519.[38]

Weighting procedures

The General Social Survey employed a complex design, using two different sampling techniques, the Waksberg design and the Elimination of non working banks Random Digit Dialing design, and multiple stages of selection. This necessitated two different weighting procedures. The Waksberg design was employed for the provinces of Prince Edward Island, Manitoba, Saskatchewan and part of Québec. For these provinces, a self weighting sample design was used, such that a basic weight for each household was computed, and subsequently adjusted for non responses and multiple telephones. A person weight calculation was done (multiplying the household weight for each responding individual by the number of eligible persons within the household), and then adjusted for external totals (in this case, Census population projection estimates for the particular stratum).

For the elimination of non working banks design, used in sampling households from Newfoundland, New Brunswick, Nova Scotia, most of Québec, Ontario, British Columbia and Alberta, a similar weighting procedure was employed. The differences were that the basic weight and non response adjustment calculations were slightly modified. Finally, the two different samples were given a combined weighting, and adjusted for age and sex using external population counts.

Unweighted samples are not generally representative of the target population, and thus survey weights must normally be applied when producing estimates or performing analyses in order to account for under or over representation as a result of survey designs. The user's guide for the 1990 General Social Survey is also adamant on this point. The weighting calculations used by most statistical packages assume simple random sampling, and thus typical weighting procedures are inappropriate. The GSS used a stratified sampling design, with substantial differences in sampling fractions between the strata. Some geographic areas of the country were thus over represented relative to their populations, while others were under represented.

A method exists whereby the variances calculated by standard statistical packages

can be made more meaningful, and this involves rescaling the weights so that the average weight is one. This will still not take into consideration (ie correct for) sample designs which depart from simple random sampling (such as the techniques employed in the GSS), but it will account for unequal selection probabilities. Rescaling is useful because more meaningful variances can be estimated, and because the problem of inflated statistical tests can be reduced. The rescaling method employed in the present analysis follows the procedure recommended by Statistics Canada. That is, after all the particular respondents chosen for this overall approach were selected (respondents with either a mother or a father still living, N=8723), the average weight for these records (FWGHT) was calculated (this turned out to be 1684.094). Then, a working weight equal to FWGHT/Average Weight was calculated for each respondent. The analysis for these respondents was performed using this new working weight variable (WT).

Questions used in the analysis

A total of eighteen variables from the 1990 General Social Survey were used in this analysis. A list of these variables, along with the survey question wording and the original coding, as well as the corresponding thesis variable name, is provided in Table 4.1 below.

Table 4.1
GSS variables used in the model

Thesis var	GSS var		Question wording
Sex	**DVSEX**	(Sex of respondent)	What is the sex of the respondent?
	Male	1 (interviewer coded)	
	Female	2 (interviewer coded)	
Age	**AGE**	(Age of respondent)	What is your date of birth?
	Minimum	15	
	Maximum	80	
	Mean	32.9	
Education	**DVEDCUR1**	(Respondent's highest level of education attained)	What is the highest level of education that you have attained?
	Masters or earned doctorate		1
	Bachelor or undergraduate degree, or teacher's college		2
	Diploma or certificate from community college, CEGEP or nursing school		3
	Diploma or certificate from trade, technical or vocational school, or business college		4
	Some university		5
	Some community college, CEGEP or nursing school		6
	Some trade, technical or vocational school, or business college		7
	Secondary school graduation		8
	Some secondary school		9
	Elementary school		10
	No schooling		11

	Other	12	
	Not stated	99 M	
Employment Status	**L26** (Respondent's main activity)		During the past 12 months, what best describes your MAIN activity?
	Working at a job or business?	1	
	Looking for work?	2	
	A student?	3	
	Keeping house?	4	
	Retired?	5	
	Disabled?	6	
	Other	7	
	Not stated	9 M	
Income	**DVPERSAL** (Respondent's total income)		What is your best estimate of the total income of all household members from all sources in 1989? Was the total household income ...
	No income	0	
	Less than $2000	1	
	$2000 to $4999	2	
	$5000 to $6999	3	
	$7000 to $9999	4	
	$10,000 to $14,999	5	
	$15,000 to $19,999	6	
	$20,000 to $24,999	7	
	$25,000 to $29,999	8	
	$30,000 to $34,999	9	
	$35,000 to $39,999	10	
	$40,000 to $44,999	11	
	$45,000 to $49,999	12	
	$50,000 to $54,999	13	
	$55,000 to $59,999	14	
	$60,000 to $64,999	15	
	$65,000 to $69,999	16	
	$70,000 to $74,999	17	
	$75,000 to $79,999	18	
	$80,000 and more	19	
	Unknown	98 M	
	Not stated	99 M	
Hours worked	**L30** (Number of hours per week respondent worked		During those weeks (that you were working), how many hours per week did you usually work?
	Minimum	1	
	Maximum	90	
	Not applicable	97 M	
	Not stated	99 M	
	Mean	33.4	

Living alone — **DVLVGR2** (Respondent lives with ...) — Derived variable

No one else	1
Spouse only	2
Spouse and children	3
Spouse and other relative	4
Spouse and non-relative	5
Spouse/children/other relative	6
Spouse/children/non-relative	7
Spouse/children/comb-other	8
Spouse/relative/non-relative	9
Children only	10
Children/other relative	11
Children/non-relative	12
Children/relative/non-relative	13
One parent/siblings	14
One parent/siblings/others	15
Two parents/siblings	16
Two parents/siblings/others	17
Other relatives	18
Non-relative only	19
Relatives/children/parents/others	20

Household size — **DVSIZE** (Total number of persons living in household) — Derived variable

One person	1
Two persons	2
Three persons	3
Four persons	4
Five persons	5
Six persons	6
Seven or more persons	7

Parent residence — **LIVING** (Whether respondent lives with either mother or father) — Constructed variable

Somewhere else	0
In respondent's house	1
Missing	999 M

Parents together — **DVA27** (Mother and father live together) — Do your mother and father live together?

Yes	1
No	2
Not applicable — one deceased	6 M
Not applicable — both deceased	7 M
Do not know	8 M
Not stated	9 M

Volunteer work **DVF29** (How often did respondent do volunteer work)

During the past 12 months, were you involved in any other unpaid volunteer work for any organizations, such as charities, teaching, fundraising, office work?

At least once a week	1	
At least once a month	2	
Less than once a month	3	
Volunteer work — amount not stated	8	
Not stated	9	M
No volunteer work	0	M

Housework **DVF9PAR** (How often was help (housework) provided to parent)

During the past 12 months, have you done any unpaid housework outside your home such as cooking, or cleaning?

At least once a week	1	
At least once a month	2	
Less than once a month	3	
Help provided but not stated	8	
Not stated	9	M
No help provided	0	M

Maintenance **DVF13PAR** (How often was help (maintenance) provided to parent)

During the past 12 months, have you helped anyone outside your household with house maintenance or outside work such as repairs, painting, carpentry, lawn mowing or shoveling snow?

At least once a week	1	
At least once a month	2	
Less than once a month	3	
Help provided but not stated	8	
Not stated	9	M
No help provided	0	M

Transportation **DVF17PAR** (How often was help (transportation) provided to parent)

During the past 12 months, have you provided unpaid transportation to anyone outside your household, such as driving them to an appointment or shopping?

At least once a week	1	
At least once a month	2	
Less than once a month	3	
Help provided but not stated	8	
Not stated	9	M
No help provided	0	M

Personal care	**DVF23PAR** (How often was help (personal care) provided to parent)		During the past 12 months, have you provided any unpaid personal care, such as help bathing or dressing, to anyone outside your household?
	At least once a week	1	
	At least once a month	2	
	Less than once a month	3	
	Help provided but not stated	8	
	Not stated	9 M	
	No help provided	0 M	
Financial help	**DVF25PAR** (How often was help (financial help) provided to parent)		During the past 12 months, have you provided financial support to anyone outside your household?
	At least once a week	1	
	At least once a month	2	
	Less than once a month	3	
	Help provided but not stated	8	
	Not stated	9 M	
	No help provided	0 M	
Leisure	**DVSATTIM** (Satisfaction with time for other interests)		Are you satisfied or dissatisfied with the amount of time you have to pursue other interests?
	Very dissatisfied	1	
	Somewhat dissatisfied	2	
	Somewhat satisfied	3	
	Very satisfied	4	
	Satisfied — degree not stated	5	
	Dissatisfied — degree not stated	6	
	No opinion	7 M	
	Not stated	9 M	
Balance	**DVSATBAL** (Satisfaction with balance between job and family)		Are you satisfied or dissatisfied with the balance between your job or main activity and family and home life?
	Very dissatisfied	1	
	Somewhat dissatisfied	2	
	Somewhat satisfied	3	
	Very satisfied	4	
	Satisfied — degree not stated	5	
	Dissatisfied — degree not stated	6	
	No opinion	7 M	
	Not stated	9 M	

The original coding scheme employed for a number of the GSS variables chosen were deemed to be inappropriate for a LISREL analysis, and several of the variables were thus transformed to either make them dummy variables or to recode them so that an interval level interpretation could be preserved. The list of the variables used in the analysis, along with any data transformation involved, is provided in Table 4.2 below.

Table 4.2
Data transformations of GSS variables

Thesis variable	GSS variable	Transformation
Sex	DVSEX	Recoded so that 0=Male; 1=Female
Age	AGE	No transformations
Education	DVEDUCR1	Recoded so that 0=No schooling; 6=Elementary school; 8=Some secondary school; 12=Secondary school graduation; 14=Some trade, technical, college or university (codes 5, 6 and 7); 15=Diploma from trade school or college (codes 3 and 4); 16=Bachelor's or undergraduate degree; 18=Master's or earned doctorate; Code 12 (Other) treated as missing
Employment status	L26	Recoded so that 0=Not employed (including codes 2 through 7); 1=Working at a job or business
Income	DVPERSAL	No transformations
Hours worked	L30	Code 97 (Not applicable) Recoded as 0 (0 hours worked)
Living alone	DVLVGR2	Recoded so that 0=No one else; 1=Someone else (codes 2 through 20)
Household size	DVSIZE	No transformations
Parent residence	LIVING	This is a constructed variable incorporating variables A3A, A23A, DVA5 and DVA28; 0=Somewhere else; 1=In respondent's house
Parents together	DVA27	Recoded so that 0=No (codes 2, 6 and 7); 1=Yes; Codes 8 and 9 treated as missing

Volunteer work	DVF29	Recoded so that 0=No help provided (code 0); 10=10 times per year (code 3); 30=30 times per year (code 2); 60=60 times per year (code 1); Codes 8 and 9 treated as missing
Housework	DVF9PAR	Same as for DVF29
Maintenance	DVF13PAR	Same as for DVF29
Transportation	DVF17PAR	Same as for DVF29
Personal care	DVF23PAR	Same as for DVF29
Financial help	DVF25PAR	Same as for DVF29
Leisure	DVSATTIM	Recoded so that 1=Very dissatisfied; 2=Somewhat dissatisfied; 3=No opinion; 4=Somewhat satisfied; 5=Very satisfied; Codes 5, 6 and 9 treated as missing
Balance	DVSATBAL	Same as for DVSATTIM

Table 4.3 below presents summary statistics for the indicators used.

Table 4.3
Statistics for indicators in the basic caregiving tension model

Indicator	Mean	Variance	Assessed proportion of error variance
Sex	0.486	0.250	0.01
Age	32.943	132.575	0.05
Education	12.669	10.053	0.10
Employment status	0.661	0.224	0.05
Income	6.587	17.861	0.15
Hours worked	33.446	347.561	0.10
Living alone	0.919	0.075	0.01
Household size	3.35	1.940	0.01
Parent residence	0.247	0.186	0.01
Parents together	0.565	0.246	0.05
Volunteer work	10.850	374.817	0.10
Housework	1.463	51.508	0.10
Maintenance	1.905	63.798	0.10
Transportation	2.954	119.823	0.10
Personal care	0.445	19.221	0.10
Financial help	0.293	6.003	0.10
Leisure	3.696	1.708	0.20
Balance	4.060	1.205	estimated

The means and variances for the indicators listed in Table 4.3 present no untoward problems. Respondents were approximately evenly split between males and females, with the average age being 33 years and the average number of years of education attained being 12.7. About 66 percent of respondents were working, and the average income of all respondents was between $20,000 and $25,000. Respondents were working an average of 33.5 hours per week in the paid labor force. Very few of the respondents were living alone, and the average household size was 3.4 persons. Three-quarters of the respondents

were not living with their parents, and slightly more than half of the respondent's parents were still living together. Respondents were doing some kind of volunteer work about 11 times per year, on average, and this is in sharp contrast to the number of times they were providing caregiving to their parent(s). Respondents did not provide, on average, more than 3 instances of help per year for any of the components of caregiving, indicating that a very large proportion of all respondents were providing no help whatsoever. Finally, respondents were generally satisfied with the amount of time available for leisure and with the balance between their job and family.

The assessed proportion of error variance allows an acknowledgment of some unreliability in the measurement of the concept, and reflects a subjective judgment of measurement problems in these indicators. Fixing Θ_ε and Θ_δ values allows one to take advantage of any familiarity with the data collection procedures, concepts and thus measurement quality. It was hypothesized that the basic demographic variables of Sex, Living alone, Household size and Parent residence are measured quite precisely (ie allowing for occasional data entry errors) and thus assessed a low proportion of error variance of .01. Age, Employment status and Parents together are posited to reflect a slightly larger proportion of error (.05). This is to account for such phenomena as age heaping and to uncertainty on the part of some respondents as to whether their parents were still living together. Education, Hours worked, Volunteer work, Housework, Maintenance, Transportation, Personal care and Financial help were all assessed a proportion of error variance of ten percent (.10). This reflects the various criticisms which some researchers have leveled against caregiving measures, as noted in the previous chapter. Some have questioned, for example, whether respondents are able to remember how often they provide care assistance, and the difficulty of treating the concepts under study as mutually exclusive categories of caregiving. In terms of hours worked, people sometimes have trouble remembering this information. Education was given a 10 percent error variance because of the problems with the original coding scheme employed. "Level of education attained" was reconceptualized as "years of education attained," and this change in conceptualization is partly reflected in the assessed error variance. This practice highlights an important feature of LISREL, that we can alter our meanings of concepts by making specific decisions about measurement quality (see Hayduk (1987: 119-122) for a more complete discussion of this notion). Satisfaction questions are notoriously difficult to measure,[39] and it was decided to assess a 20 percent error variance to the satisfaction with leisure indicator as a way of reflecting the uncertainty respondents may face when attempting to assess how satisfied they are with their leisure time.[40] To counter any criticisms regarding the chosen levels of error variances, a double-half assessment strategy was employed (re-running the model with all of the Θ_ε and Θ_δ values first individually halved, and then doubled), and the results are presented in the following chapter.

Why LISREL?

LISREL, short for *li*near *s*tructural *rel*ations, refers to a general program for estimating structural equation models, and is useful for analyzing a wide variety of models using diverse data sources. The usefulness of structural equation modeling generally was demonstrated in Duncan's (1975) still classic introduction, and has been extended ever since. LISREL, for several reasons, is a preferred analytic approach as long as some form of *causal* relationship among variables, either latent or observed, is posited. Especially unique is LISREL's ability to allow one to constrain (fix) model coefficients, to distinguish between latent concepts and observed indicators and to routinely fix measurement error, features which have no easy parallel in, for example, traditional regression analysis (see the beginning of Jöreskog and Sörbom (1989: 1) for further differences between LISREL and regression).

That *causal* relationships are assumed is a crucial underlying assumption. An

important distinction to be drawn here is that between "causation in our thinking" and "causation in the real world." Hayduk (1987: xv) expresses this distinction eloquently when he states that it is not necessary to defend causality as actually existing in the real world: "Causal thinking may merely constitute a general and parsimonious way for our brains to grasp and summarize data whose ultimate determinential essence is beyond our current knowledge ... Causation may not be in the real world or in the equations, but it is definitely in our thinking." While any number of analytical strategies can be used to analyze any number of social science phenomena, LISREL was chosen to study the determinants and effects of caregiving because of its statistical advantages over other forms of causal analysis.[41]

Model Description

Figure 4.1 presents a LISREL model[42] predicting caregiving determinants and the subsequent effect of the degree of caregiving burden on temporal harmony. All of the posited causal sequences have previously been investigated in some form or other in the literature, albeit using different concepts and indicators, and thus it is thought that this model is fairly well grounded in prior theoretical fictions.[43] There are few structural equation models to be found in the caregiving literature, and this particular model of caregiving tension, therefore, posits a more rigid implication structure than that found in much previous research in this area.

There are 7 endogenous concepts in the model, housework (η_1), maintenance (η_2), transportation (η_3), personal care (η_4), financial help (η_5), caregiving (η_6) and life balance (η_7). All of the causal mechanisms hypothesized to operate between these endogenous concepts and the exogenous concepts are detailed in the previous section on "Hypotheses."

The Gamma (Γ) and Beta (B) matrices contain coefficients which express the endogenous concepts (the *dependent* variables in ordinary regression terminology) in the model as linear combinations of all the other conceptual variables (both exogenous and endogenous) in the model. The Gamma (Γ) matrix (which links the exogenous concepts to the endogenous concepts) is fixed with 0 values, except for the following paths (or structural coefficients) for which maximum likelihood estimates (MLE) are needed: γ_{11}, γ_{12}, γ_{15}, γ_{16}, γ_{17}, γ_{18}, γ_{19}, $\gamma_{1,10}$, γ_{21}, γ_{22}, γ_{25}, γ_{26}, γ_{27}, γ_{28}, γ_{29}, $\gamma_{2,10}$, γ_{35}, γ_{36}, γ_{37}, γ_{38}, γ_{39}, $\gamma_{3,10}$, γ_{41}, γ_{42}, γ_{45}, γ_{46}, γ_{47}, γ_{48}, γ_{49}, $\gamma_{4,10}$, γ_{51}, γ_{55}, $\gamma_{5,10}$, γ_{73}, γ_{75}, γ_{76}, γ_{77}, γ_{79} and $\gamma_{7,11}$. While both income (ξ_5) and hours worked (ξ_6) are posited as having no effects on the caregiving concepts (η_1 through to η_5), except a direct positive effect of income (ξ_5) on financial help (η_5), estimates of these effects are wanted nonetheless (γ_{15}, γ_{25}, γ_{35}, γ_{45}, γ_{16}, γ_{26}, γ_{36} and γ_{46}). These posited zero effects which are nevertheless estimated are represented in the model (Figure 4.1) as shaded lines leading from ξ_5 and ξ_6 to the relevant eta variables.

The Beta (B) matrix contains the links among the endogenous concepts (ie the links among the etas (η) in the model in Figure 4.1). It is specified as a full matrix fixed with 0 values, except for the following paths: β_{61}, β_{62}, β_{63}, β_{64}, β_{65} and β_{76}. It is possible, because of prior empirical findings or especially assertive theory, to fix certain coefficients.

In this model, β_{61} through β_{64} have been given fixed values of 1.0, while β_{65} has been given a fixed value of 0.5. Since the underlying caregiving dimensions all have the same metric of number of instances of help provided per year, fixing the first four of these Beta coefficients at 1.0 cumulates the total number of times per year from all the underlying dimensions. Fixing the last Beta coefficient at 0.5 indicates that financial help is treated as being "half" as effective as the other four concepts, and hence each instance in which a respondent has provided financial help contributes as much to η_6 as half an instance of any of the other four underlying dimensions of caregiving. Thus, η_6 is a sum of the number of instances of help given per year, with the proviso that it requires two instances of financial assistance to constitute as much assistance as one instance of any of the other types of caregiving help. In essence, η_6 constitutes the total weighted frequency of caregiving, and it is this total frequency that is postulated as influencing η_7, via B_{76}, rather than each underlying caregiving dimension individually.

Though the metric effects of the first four underlying caregiving dimensions are forced to be equal, this does not mean that the help variables contribute equal amounts of variance into η_6. The amount of variance contributed to η_6 will depend upon the variances of the corresponding variables, and in particular, since transportation (η_3) has the most variance, it will contribute more to the variance of η_6.

In essence, what has been done is that the caregiving concept (η_6) has been created (ie defined) as a composite of observable indicators, as opposed to being measured by them. Rather than conceptualizing "caregiving" as an underlying cause of housework, maintenance, transportation, personal care and financial help, a conceptualization which could not have been avoided had we modelled this concept in the traditional manner, with the caregiving components acting as observed indicators only and not as concepts, caregiving has been defined as a concept integrating possibly divergent scores on the five dimensions of caregiving. In this way, caregiving is conceptualized in a very similar manner to how SES has been originally thought to operate.[44] The psi value corresponding to caregiving has been fixed at zero, since it is believed that only the modeled caregiving dimensions are necessary for a full definition of caregiving.

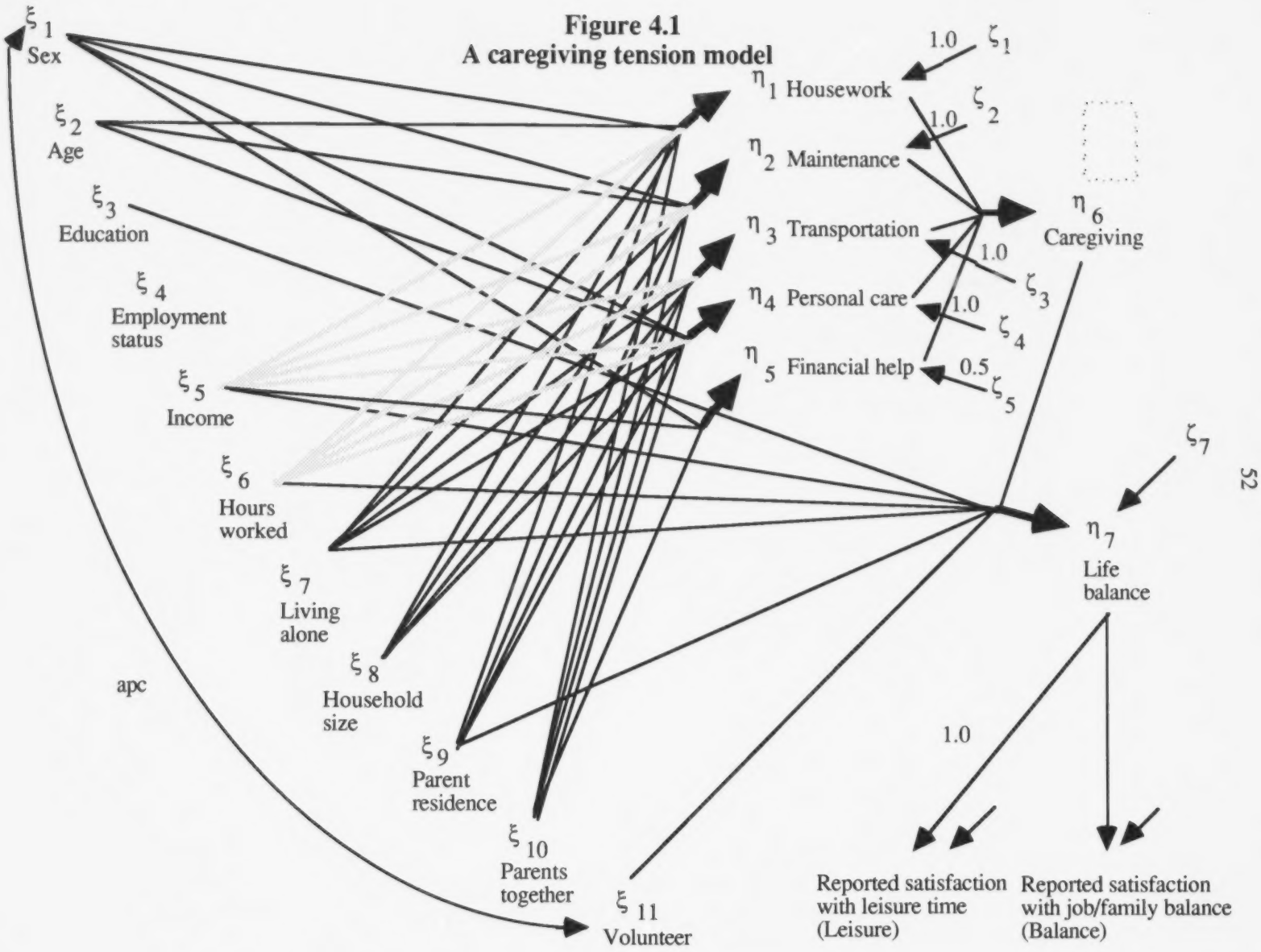
Each of the exogenous concepts has one indicator (not shown in Figure 4.1, but see Table 5.1), and thus the Lambda-sub x matrix (Λ_x) is full and fixed with values of 1.0 for λ^x_{11}, λ^x_{22}, etc through to $\lambda^x_{11,11}$. What this does is scale the concepts to their respective observed indicators such that a one unit change on the concept results in a one unit change on the corresponding indicator. Similarly, the Lambda-sub y matrix (Λ_y) is full and fixed with values of 1.0 for λ^y_{11}, λ^y_{22}, etc through to λ^y_{55}. The concept of life balance (η_7) has two indicators. The best indicator of the two is thought to be the reported satisfaction with leisure time (since it is believed that this statement carries a clearer meaning to respondents than the "reported satisfaction with job/family balance"), and it is thus this indicator (λ^y_{67}) which has been scaled at 1.0 (shown in the model). The other lambda coefficient (λ^y_{77}) has been freed, and will thus be estimated via maximum likelihood.

The theta epsilon (Θ_ε) and theta delta (Θ_δ) matrices contain error variances and covariances for measuring the endogenous (η) and exogenous (ξ) variables, respectively. The form of these matrices is symmetric and fixed, containing non-zero values on the

diagonal, and zeros on the off-diagonal elements. It is the usual practice to fix error variances at some non zero value, since the implication of not doing so is that the concepts and indicators are identical. Fixing error variances is an acknowledgment that indicators can be influenced by concepts other than the posited underlying concept. Each of the error variances in the model (except for $\Theta^{\varepsilon}_{77}$) has been fixed by multiplying the variance of the indicator by its assessed proportion of error (see Table 4.3). The error variance for one of the multiple indicators in the model ($\Theta^{\varepsilon}_{77}$) has been left free to be estimated.

This completes the description for the proposed LISREL model, diagrammed in Figure 4.1. The results of this LISREL run, as well as ensuing modifications to the basic model, are discussed in chapter five.

Figure 4.1
A caregiving tension model



Chapter 5

Results and implications of the basic caregiving model

The model fit

While there are many ways of assessing the adequacy of a model in LISREL, one is invariably drawn to the maximum likelihood Chi-square statistic (X^2) as the first indication of how well Σ matches S.[45] This is because the Chi-square statistic provides an omnibus test of how well the observed data matches the covariances among the concepts implied by our "fictional" model, and thus provides a good starting point for assessing model fit. Since the X^2 test is an omnibus test, however, other ways exist of determining the adequacy of model fit. The LISREL program was able to provide maximum likelihood estimates for the model diagrammed in Figure 4.1 (after 38 iterations), and perusal of several pieces of the output indicate that while this model is not perfectly fit, it does provide a reasonable fit between Σ and S. The X^2 statistic with 50 degrees of freedom for the whole model is 113.64, leading to a highly significant (based on conventional criteria) p value ($p = 0.000$), and the adjusted goodness of fit index is 0.995. The goal is to arrive at a small, and *insignificant* X^2 value, since this indicates that the differences between Σ and S could be due to sampling fluctuations. The significance of our model's X^2 indicates Σ and S differ, but this is largely due to the precision of X^2 at detecting even minor differences when N is as large as 3519. Overall, it appears that the data are reasonably well fit despite the significance of X^2.[46]

There are other, more instructive procedures, however, for assessing model fit. One of these is to examine the pattern of residual covariances present (these residuals are the differences between the observed covariances and the model-implied covariances). The output of "normalized residuals" (residuals which are standardized, or scaled, so that they represent standard deviations the observed residuals are away from the zero residuals of a perfectly fitting model) for the present model indicate a few problems (for a graphic representation of these residuals, see the Q-Plot on page 46 of the output). There are relatively large residuals for the covariances between the indicator variables of *transportation* and *sex* (2.4), *leisure* and *household size* (-2.3), *personal care* and *leisure* (2.1), *personal care* and *volunteer* (2.0), and between *balance* and three other variables: *living alone* (3.0), *household size* (2.7) and *parents together* (2.6).[47]

In addition, there are no correlations among the estimates which approach 1.0, a good argument against colinearity concerns (a value estimated for one coefficient almost perfectly predicting the value for another coefficient).

The modification indices of the various coefficients, which are rescaled partial derivatives adjusted for variable scaling and the second order partial derivatives, can also provide useful diagnostic information. In the output for this model, while there are some fairly large modification indices, the maximum modification index (MI) (ie the maximum amount of improvement in model fit which could be expected) is only 12.15. This MI is for Θ^{δ}_{62} (the covariance between the error terms for *age* and *hours worked*). In the theta delta matrix, there is also an MI of 11.6 for Θ^{δ}_{77} (*living alone* and itself), and one of 9.4 for Θ^{δ}_{91} (*parents together* and *sex*). The largest MI in the theta epsilon matrix is 5.3 for $\Theta^{\varepsilon}_{64}$ (*personal care* and *leisure*). The strategy which suggests itself at this point is to re-estimate the fixed proportion of error variance for some of the x and y variables (ie either to halve or

double the assessed proportion of error) to determine what difference this makes to the overall model fit. This is a reasonable suggestion, and the reason this is done is to help counter arguments that the researcher has been either overly optimistic or overly pessimistic in their assessment of how much error lies in measuring the concept under consideration. That is, researchers never have perfect knowledge about measurement structure, and adopting this particular double-half strategy helps to answer claims that the researcher has unrealistically assessed the error inherent in measurement.

Thus, a series of thirty-four runs was performed in which only one value for the proportion of error variance was changed from the initial run. Each of the values for Θ_ε and for Θ_δ were halved and doubled to see what change this would produce in the model. In thirty of the runs, the results were virtually identical to those of the initial run. In the other four runs, there were only very minor changes. In the theta epsilon matrix (Θ_ε), only doubling and halving the values for $\Theta^{\varepsilon}_{66}$ (satisfaction with time for other interests) made any difference. Although there were no differences in the gamma values, halving $\Theta^{\varepsilon}_{66}$ slightly decreased $\Lambda_y{}^{77}$ (from 0.509 to 0.452) and slightly decreased the R^2 for η_7 (from .072 to .064, with a X^2 of 118.5, p value = 0.000). Doubling $\Theta^{\varepsilon}_{66}$ slightly increased $\Lambda_y{}^{77}$ (from 0.509 to 0.673) and slightly increased the R^2 for η_7 (from .072 to .087, with a X^2 of 110.4, p value = 0.000). Similarly in the theta delta matrix (Θ_δ), doubling and halving the value for Θ^{δ}_{55} (income) resulted in some very minor changes to some of the values for gamma, a slight decrease and increase, respectively, in the X^2 statistic, but no changes in the proportion of explained variance.

In any event, I would not have been prompted to change my interpretations in any way as a result of these re-specifications in the values of Θ^{ε} and Θ^{δ}. It is still interesting to observe, however, that even such a supposedly minor change as doubling or halving one of many parameters in a LISREL model can result in an increase in the proportion of explained variance by almost two percentage points. This clearly demonstrates, for want of a better terminology, the "interconnectedness" of a LISREL model; changing one parameter can potentially have significant effects on the overall model because of the nature of the covariances between that parameter and many other parameters.

In the Λ_x and Λ_y matrices, while there are a couple of entries having a MI of between 8 and 10, allowing some of the exogenous and endogenous variables to respond to indicators other than the ones specified would only provide a minimal improvement in model fit. In the B matrix, the three largest MIs are for β_{32}, β_{34} and β_{35} (9.3, 7.5 and 7.6, respectively). This indicates that any one of these particular coefficients, previously fixed at 0, could be freed.[48]

In addition, it was thought that a further improvement in model fit might result if the "weights" given to the five caregiving components (η_1 through η_5) were to be changed. The standardized estimates (such that the estimates are rescaled so that each η and ξ variable has a variance of 1.0, while their indicators retain their original scales) for β_{61}, β_{62}, β_{63}, β_{64} and β_{65} were, respectively: 0.369, 0.412, 0.564, 0.226 and 0.063. Remembering that standardized effects near 0 are small, while those near 1.0 are large, it is apparent that the fixed equality of the metric effects, combined with the larger variance for transportation, implies that transportation is most strongly linked to caregiving (β_{63} = 0.564). The fixed 0.5 metric effect for financial help indicates that the basic variance

contribution from this variable is 0.5^2 or 0.25 of transportation's variance, in contrast to the 1.0^2 or full contribution of the variances of η_1, η_2, η_3 and η_4. When the weaker metric effect for financial help is combined with its lower variance, in the calculation of the standardized slope, a weak standardized effect (0.063) appears.

Two pieces of information can be readily grasped here: (1) the fixed and equal metric effects of the first four underlying caregiving components imply moderate standardized effects on caregiving, and (2) financial help transmits only a small standardized effect.

Had we wished to have more uniform standardized effects, we could have used fixed metric effects such as: $\beta_{61} = 1.3$, $\beta_{62} = 1.2$, $\beta_{63} = 1.0$, $\beta_{64} = 1.7$ and $\beta_{65} = 1.0$. This would clearly change our concept of "equality" in that such a scaling procedure ignores the real units of "instances per year" which we attempted to provide by our coding of the caregiving dimensions. Indeed, the only way to get equal standardized effects would be to force the caregiving concepts to transmit differential proportions of their variances to η_6.[49] This demonstrates a different conceptualization of equality, but it is the previous conceptualization which we wish to retain — transmitting equal metric effects regardless of the different variances involved.

In light of this, a run was performed which re-specified the Beta coefficients for β_{61} through to β_{65} as noted in the previous paragraph. This re-specification made no difference to the model, as virtually all of the other Beta coefficients were either identical to or very similar to the model results obtained with the original specification of 1.0, 1.0, 1.0, 1.0 and 0.5.

Thus, using the Chi-square statistic, and also the other criteria noted above, this particular caregiving tension model, while not providing a perfect fit to the observed data, is nevertheless reasonably well fit. The following section provides a detailed discussion of the maximum likelihood results, as obtained by version 6 of the LISREL program.

Results of the caregiving tension model

Tables 5.1 and 5.2 at the end of this chapter provide maximum likelihood estimates for the caregiving tension model described.[50] Table 5.1 presents the maximum likelihood estimates for Lambda Y (The estimates for Lambda X are not shown, as all of the exogenous concepts had only one indicator each). Beginning with an analysis of the multiple indicators, the lambda value not given a fixed value of 1.0 ("reported satisfaction with job/family balance") is significant (ie has a large T value of 32.3) and is moderately large, substantively. The explained variance for this indicator is only 0.294, indicating that about 29 percent of its variance is explained by, or arises from, the conceptual variable of *life balance*. The covariance of 0.69 for the two life satisfaction measures implies a correlation of 0.48 (which results from dividing the covariance of the variables by the standard deviations of the variables). Another method of assessing the quality of these multiple indicators is to look for patterns in the normalized residuals. A comparison of the normalized residuals for the two indicators reveals that these residuals are not all that consistent, with the signs and the sizes of the residuals for the two indicators often being different. An examination of these residuals, in combination with only a moderate correlation reveals that the two satisfaction measures work only moderately well together.

In terms of the conceptual portion of the model, five of the seven effects leading from sex and age to the endogenous concepts reach significance at the .05 level (ie these effects exceed two standard errors). In the following discussion, the focus of attention will be on the significant coefficients. Females provide more housework than males, on average, which is what was expected. Females, however, also provide more instances of financial help, which is contrary to the hypothesis. This raises the issue of the kinds of

research which still needs to be conducted in the area of specific caregiving functions. With regards to financial assistance, for example, it was reported in chapter three that Horowitz (1985) found that sons tend to play a more substantial role in the provision of financial servcies. But the research on this particular topic tends to be mixed, since it was also found by Stoller (1983) that, of all caregiving tasks provided, the smallest difference between sons and daughters was found in the area of financial matters (and handling personal business). The findings in regard to the effect of sex on financial help indicate that results can be "read" in different ways. That is, while the results obtained here show that females provide more instances of financial help than males, the effect size is extremely small, and almost meaningless (keeping in mind the interpretation of the standardized coefficients shown in brackets in Table 5.2, that effects near 1.0 are large and effects near 0 are small, the coefficient for sex on financial help is a mere 0.055).

In addition, females provide less maintenance, in accord with expectations, and no significant effect is found between sex and personal care. The second of these findings is much more surprising, if the research of Horowitz (1985) is considered.She found that daughters provide more direct services and more services calling for hands on assistance (except health care) than did sons. In so far that it could be argued that maintenance does not involve as much "hands on" care as other kinds of care, it seems reasonable that females would provide less maintenance. Personal care, however, seems to be a very "hands on" and "direct" service, and it clearly follows from this that females should have been found to provide more instances of personal care. Yet again, however, the issue of whether some of the personal care provided is "health care" complicates matters. In short, the fact that research results may sometimes be read in multiple and conflicting ways argues for a clear consensus on terms and definitions. More concretely, the foregoing discussion indicates that there is clearly a need for more research into the antecedents of specific types of caregiving functions.

Older persons provide more personal care, as expected, but less maintenance, contrary to expectations. Again, an alternative interpretation is possible. While it certainly makes sense to hypothesize that older persons will generally provide more caregiving duties to their older parents, tasks pertaining to maintenance involve more physically demanding activities, and may thus be shifted to younger caregivers. Also, there is no significant effect found between age and the amount of housework provided. This is an interesting finding, since it has been found that older parents usually require more assistance, and thus older caregivers have increasing care demands placed upon them.

While the significance of the estimates is an important starting place in assessing the explained variance of the endogenous concepts, as, if not more important is the effect *size*. LISREL provides a clear picture of effect sizes called the "standardized solution," such that all of the concepts are given a variance of 1.0, while the indicators remain in the original scales. Thus, values for B and Γ which are near 1.0 are large, while those near 0 are small. The standardized solution demonstrates that substantively small coefficients, *even though highly significant*, are probably unhelpful (and vice versa — very large effects, though not significant, may be quite substantively important.)[51] Turning to the standardized solution, none of the effects leading from age and sex to the endogenous concepts are very substantive, since the largest effect is only 0.09 (sex to housework). Using this coefficient as an example, being female (as opposed to being male) results in a little less than one tenth of a standard deviation increase in the number of instances of housework performed.

As expected, income has no significant effect on the caregiving concepts of maintenance, transportation and personal care, and has only a marginally significant effect on housework. Income does, as hypothesized, have a significant effect on financial help. According to the standardized solution, a one standard deviation increase in income is associated with an increase of 0.08 of a standard deviation in the number of instances of financial help provided. Similarly with the number of hours worked, our hypothesis is confirmed: hours worked is not significantly associated with providing more housework,

maintenance, transportation or personal care. This clearly illustrates that working caregivers are under added stressors, since the majority of caregivers continue to provide their caregiving responsibilities even when employed full time in the paid labor force.

The only significant effect of living alone is on transportation, and it is opposite to what was expected. Living with someone else (since it is coded so that 1=living with someone else) is associated with providing more instances of transportation to a parent than if one lives alone. This could be explained by the fact that it is well possible that some of the people living with these respondents are of course parents, and thus the increased needs of these parents (such as transportation) cause them to live with their adult children. Household size, similarly, is not significantly associated with any increase in caregiving duties except transportation and personal care (with both of the standardized effects for living alone and household size being minuscule). That living alone and household size do not have any significant effects on the other caregiving measures is again contrary to our hypothesis.

Parent residence is significantly associated with the amount of housework, maintenance and transportation provided, and in the expected direction. The peculiar wording of this GSS question is to be remembered. The 1990 GSS survey instrument did not ask respondents whether they were providing any caregiving assistance to members living *within* their household, only whether they were providing assistance to persons *outside* their household. Respondents thus either had neither a mother or father living with them (a score of 0) or had at least one parent living with them (a score of 1). The results indicate that respondents having at least one parent living with them are less likely to provide housework, maintenance and transportation to parents who are not living with them than are respondents with no parents living with them. Respondents having a parent living with them have less chance of having both parents living away from them, and hence have fewer demands from parents not living with them, as required by the routing on the questionnaire. Moreover, the standardized effects, while not *absolutely* large, are *relatively* large in that the two largest standardized effects are the ones leading from parent residence to maintenance and from parent residence to transportation (γ_{29} (-0.16) and γ_{39} (-0.14), respectively).

Finally, it was hypothesized that those respondents whose parents live together should perform fewer of all types of caregiving. This hypothesis followed from the research (such as Cantor's) showing that spouses provide the bulk of care to the needy when they are available, with children, other relatives and then friends generally filling in the gaps when spouses are unavailable. It is evident from the table, however, that the only significant effect of parents together is on financial help, with those respondents having cohabiting parents providing less financial help.

Keeping in mind the earlier mentioned caveat regarding effect sizes, while some of the relationships described above may be significant, they are extremely weak. The concepts chosen to account for the five caregiving concepts provide virtually no explanatory power, with the largest explained variance being 3.3 percent, for maintenance (η_2).

The causal effectiveness of the background concepts on life balance, however, presents a slightly more optimistic picture, with four of the posited seven effects being significant at the 0.01 level. Education, income, hours worked and parent residence all have significant effects on life balance. Only two of these relationships are in the expected direction. The higher one's income, the greater is one's felt sense of life balance, while the greater the number of hours worked, the less is one's felt sense of life balance. These are in accord with the stated hypotheses. However, while it was hypothesized that the higher one's education, the more satisfied they should be with their temporal balance, the opposite effect was found. It is perhaps the case that higher education leads to higher status occupations, bringing with it the increased time demands and stresses entailed by these

occupations. Whatever the causal mechanism in regards to education, it seems clear at least that we must be wary when working with the standard concept of socioeconomic status. In this case, occupation, income and education do not operate in a unitary fashion, since the results obtained here indicate that the latter two variables have opposite effects on temporal balance.

Similarly, it was thought that having at least one parent living would lead to decreased satisfaction with temporal balance. The opposite relationship, however, was observed. Finally, perhaps the most surprising effect of all was the *absence* of any significant relationship between the amount of caregiving performed and satisfaction with life balance. The proportion of explained variance for the life balance concept is quite small (.07). It can be safely said, at least on the basis of this model and using this particular data set, that parental caregiving really does not have any effect on temporal balance at all, at least the way in which it is conceptualized in this study.[52]

Implications and discussion

Although the caregiving tension model described in the previous chapter does provide a reasonable *statistical* fit between S and Σ (at least according to the usual indicators), there are certainly other criteria which are perhaps even more important. Hayduk's (1987: 172-173) comment in this regard is to be emphasized: "The adequacy of a model also depends on what we were seeking from the model in the first place, so assessments of model adequacy should also reflect the substantive concerns that prompted model development."

Examining the modification indices indicates that certain changes *could* be made in the model, but only if a corresponding change in the theory were to be allowed. These changes should not be interpreted as data driven changes, though they may appear as such. When working with LISREL models, it is crucial that the model itself be thought of as a theoretical structure. Changing models always implies changing theories, and the researcher should always be well aware of this. For example, in the present model, being sensitive to the modification indices within the portion of the model comprising the five caregiving concepts implies that a path to η_3 (transportation) from η_2 (maintenance), η_4 (personal care) and η_5 (financial help) would have to be allowed. This seems, indeed, a reasonable change, even though again, only a slight improvement in model fit would result. Doing certain kinds of caregiving, such as personal care and maintenance, implies doing more transportation. While the current model could be rerun with this change in place, it was decided not to do so here. If this model were to be re-estimated in the future, however, it would thus make sense to make this change. The largest modification index in the Γ matrix is 7.6 for γ_{31}. Some improvement in model fit could be gained by allowing an effect from sex (ξ_1) to transportation (η_4), but this is not a theoretical alteration which is allowed in the present thesis. Thus, researchers are always free to change their model and re-estimate, as long as it is acknowledged that they are in the same action changing their theoretical thinking.

Using the particular data chosen, we were trying to determine first, the major influences of caregiving to parents, and second, whether caregiving was an influence on one's sense of life balance. In regards to the background concepts and their effect on the endogenous variables, many of the relationships posited were found not to be significant. Being female, for example, was found to be associated with performing more housework but less maintenance. This is perhaps explained by the fact that maintenance often involves tasks requiring more physical strength, tasks which sons are perhaps more willing to take on. An alternative explanation is that rather than physical strength being paramount, these

kinds of work are defined by gender. Women are also found to perform more instances of financial help, a finding which is at odds with results obtained by Horowitz (1985), but consistent with those obtained by Stoller (1983). There is still enough evidence here to confirm the fact that caregiving demands fall disproportionately on women's shoulders. Caregiving is, indeed, a women's problem.

Age did not have as pronounced an effect on the caregiving concepts as expected. The only kind of caregiving which older persons were found to perform more of was personal care. The role of age on the performance of caregiving duties, as noted in chapter three, has been found by researchers to be inconsistent. Thus, this lack of clear positive or negative consistency of age with the various caregiving components is not surprising.

The strongest finding which emerges from this model is the non existent effect of employment on caregiving. Neither income nor the number of hours worked had any significant effect on either the amount of housework, maintenance, transportation or personal care provided, and income had a significant effect only on financial help. Thus, all of the hypotheses for income and the number of hours worked were confirmed. In light of this finding, it seems clear that the increased caregiving demands placed on employed caregivers is demonstrated. Caregivers who are employed in the labor force do not reduce the amount of caregiving they provide. For this reason, those studies which have found that paid employment may offer caregivers more flexibility and thus more relief from caregiver burden (such as Hooyman and Ryan 1987) might need reconsideration. The literature is filled with numerous studies suggesting that women (primarily) respond to increased employment demands not by decreasing their caregiving, but by increasing their work week, and the model results presented provide strong confirmation of this.

Living alone and household size are not good predictors of caregiving in this study. Living alone was significantly associated with providing fewer instances of transportation (opposite to what was expected), and increasing household size was significantly related to providing less transportation. Again, these are variables which have not been directly tested in many studies. The variables of interest have usually been marital status, and the general finding is that being married or cohabiting is associated with the provision of fewer hours of caregiving, as compared with being single (eg Mindel and Wright 1982; Noelker and Wallace 1985; Lang and Brody 1983). The concept of marital status is really being used as a proxy for the number of persons a caregiver is living with. For example, as Noelker and Wallace state (1985: 41), it is quite possible that multiple role demands of caregivers engendered by being wife, parent, employee and primary caregiver cumulatively contribute to care related stress. The significant negative relationship found between household size and transportation at least provides confirmation of this trend.

Parent residence, as expected, was found to be a better predictor of caregiving. The particular variable used in this study, due to the question routing employed by Statistics Canada, is a strange one. Respondents who had at least one parent living with them were *less* likely to provide housework, maintenance and transportation to a parent living away from them than were respondents who had no parents living with them. This makes sense if it is remembered that respondents were asked only about caregiving to persons living *outside* their household. What is probably transpiring, and in fact these results provide evidence for this, is that those respondents having a parent living with them are already presumably providing a large amount of caregiving to that parent, and thus have less opportunity or need to provide assistance to a parent living outside the household, because they have fewer parents outside the home. This confirms the finding demonstrated in several studies that co-resident caregivers are more heavily burdened, including those of Jutras and Veilleux (1991), Reece et al (1983), Gilhooly (1984) and Lang and Brody (1983). Presumably, as well, those parents not living with a child are needing less care than those parents who, for whatever reason, are living with their adult children.

In terms of whether a respondent's parents are living together or not, the only significant effect for this variable is on financial help, with respondents having cohabiting parents providing less financial help. The large body of research done on the hierarchical

compensatory model, showing that spouses provide care when available, followed by children, relatives and others, clearly suggested the hypothesis noted in this study. There are many reasons which could account for this contradictory finding, including the fact that the particular sample of elderly persons in this study, because of the selective cases involved, are all relatively healthy and require little care.

The most surprising finding is that caregiving was found to be unrelated to a concept which was conceptualized as *life balance*. As well as trying to determine the causal influences of certain variables on caregiving, interest also lay in determining the effects of caregiving on *life balance*. There has been much literature on the effects of caregiver burden, and it was decided to investigate the effect of caregiving on caregivers' satisfaction with two temporal measures. This is consistent with one of the stated themes of this thesis, an examination of and reflection on the pace of time in our lives. While it is incontrovertible that time is perceived differently by people, much less is known about whether certain cohorts of people may perceive time similarly. Taking a cue from discussions of life-rhythms and how these rhythms have been shown to vary across the human spectrum, and also from some theoretical formulations on time embeddedness (Lewis and Weigert's (1981) basic claim that the more things we do in life, the more a sense of "time panic" we feel), it was postulated that increased caregiving should result in less satisfaction with something akin to "temporal balance." This idea was clearly supported in the literature (see the section on "effects of caregiving: lifestyle and leisure time changes" in chapter three), with many studies finding that a pernicious effect of caregiving burden has been a decrease in free time and recreational activities.

The caregiving concept employed, however, had no significant effect on life balance, although other posited concepts did. In particular, education, income, hours worked and parent residence had significant effects. However, only seven percent of the variance in life balance was explained by these concepts. Clearly, if there is such a concept as "life balance" (itself a product of fuzzy theoretical thinking), it is influenced by other, more important causal mechanisms than the ones posited. Perhaps one tentative claim which can be advanced is that the typical socioeconomic status concept does not clearly act to increase one's sense of life balance (ie having a higher SES does not necessarily imply being better "temporally adjusted," as some literature has claimed). While having more income leads to increased satisfaction, having more education leads to *less* satisfaction, as does working more hours. This seems to provide evidence against a unitary concept of SES working as a buffer against life's various stresses and strains.

Clearly, the results obtained from this particular model using the GSS 1990 data can only be treated as a beginning. Some important considerations should be kept in mind, however. As noted in chapter three, the conceptualization of caregiver burden in the literature has been fraught with difficulties. This study has demonstrated Poulshock and Deimling's (1984: 230) claim that the diverse definitions and measurements of caregiving utilized in different studies has made cross study comparisons difficult. Caregiving is by no means a unitary, agreed upon concept, and it is for this principal reason that we must be wary of confronting previous researchers whose results may have differed somewhat from those obtained here (except in the cases noted above, where it is believed that the results provided by this LISREL model are strongly confirming). Much of the previous research conducted on caregiving has tended to deal with a caregiving concept which is broad and all encompassing. Some researchers have spoken about caregiving without really recognizing that the specific *components* of caregiving burden need to be examined individually. For example, while it is fine to say that having more people living with you (ie a larger household size) leads to the provision of less caregiving, it must be determined exactly what *kind* of caregiving is being provided less often — cooking, or doing laundry, or providing personal care relating to activities of daily living. If LISREL cannot prevent anyone from being lazy in their theoretical thinking, it can at least urge them to specify more precisely exactly just what it is they mean to say!

This is the direction which was pursued in this thesis. Rather than claiming that

certain background concepts, such as sex and age and income, influence caregiving, the goal has been to more precisely define just *how* sex and age and income influence caregiving — that is, through which components of caregiving. An attempt has been made, in essence, to come closer to the extant causal world "out there." This could partly account for the differences between the results obtained and previous research findings. The goal has been to *force* the thinking of other researchers to travel through a more narrow conceptual channel.

In addition, the data limitations inhering from the use of this particular data set must be acknowledged. The caregiving measures are, in retrospect, poor. Asking "how often" certain types of caregiving were provided gives us only a rough estimate of instances of help, and it is impossible from this question wording to determine the number of hours of care given. Caregiving has been reconceptualized into "the number of times per year," and this is also lacking precision — "the number of times" seems far less useful than the actual "number of hours" of care provided. While the latter, more objective measure of caregiving can also be problematic, as Lang and Brody (1983: 198) state, it seems nonetheless a better measure than that employed in the 1990 GSS. The categories of caregiving employed in the GSS, moreover, may not be mutually exclusive, and this leads to difficulties when trying to determine the unique influences of each of these caregiving concepts.

Also, asking respondents about intra-household caregiving, as opposed to only inter-household caregiving, would have allowed me to more clearly disentangle the influence of "parent residence" in this study. This seems a troublesome dummy variable because first, we are not able to determine the unique effect of having one parent or both parents living with the respondent, and second, because all of the deceased parents are grouped together with parents simply not living within the respondent's household. The 1990 GSS is a large cross sectional survey of adult Canadians, and while it has the advantage of being representative, it lacks the specialized questions and measures often called for in the study of caregiving and well being. This may also account for the difference in findings between this study and previous studies, which have often used smaller qualitative and researcher specified inquiries.

Any attitudinal variable also raises difficulties, and it is no different with the satisfaction measures employed in this survey. Perhaps actual counts of how many more hours respondents would like to have available for such areas as leisure would have been more useful. Also, it must be asked what the question on satisfaction with the balance between one's job and family means to those respondents not having employment in the paid labor force, or to those not having immediate families.

In addition, this study did not have other and potentially more important caregiving influences at its disposal. In particular, the functional disability of the care recipient has been found to strongly determine the amount of caregiving provided, and this data set lacked good measures of health status or level of functionality on the part of the care recipient.

Perhaps the greatest limitation of the present data set is the fact that the vast majority of respondents actually provided no caregiving whatsoever. That is, for whatever reason, most of the respondents were not providing caregiving assistance to their parents, or perhaps (and this is the most intriguing hypothesis) not defining the help they actually *were* giving as care. This certainly indicates, and many other studies also show, that the elderly in our society are a very healthy group of persons. In addition, the sample was limited to the non-institutionalized elderly. Most of the studies directly examining caregiving have used more biased, non random samples of individuals in order to be able to actually tap into the population of interest. As noted, the large, random cross sectional nature of the present design is not the best suited to trying to uncover information about caregiving.

Conclusion

What can be learned from this study? First, certain factors are clearly more important than others in determining the amount of caregiving provided to parents by adult children. Clearly, the accepted determination of caregiving as a "women's problem" makes sex the crucial factor, while income and hours worked have been shown not to be a strong influence on caregiving. Second, specific types of caregiving should be studied when looking at caregiving at all, as opposed to a more general concept. Determining the particular kinds of care which lead to greater stress on the part of caregivers goes a long way toward the formulation of more specific and useful policy proposals aimed at ameliorating negative consequences of caregiving. Third, while it is indisputable that caregiving carries with it many negative consequences, more research needs to be done on whether a felt loss of temporal stability is one of them.

Though it has been well accepted by the literature that women do indeed assume primary responsibility for caregiving, this study has failed to strongly confirm this. Any number of reasons could explain this. One suggestion is that there could be a transference of duties among respondents in this particular sample, such that perhaps some men are assuming greater caregiving duties outside the home, while their wives are staying home and taking care of domestic duties. This could perhaps explain why women are not shown to be primarily responsible for the majority of caregiving duties. Any number of other factors could also be operative. The point to make here is that the conclusions drawn from the findings of this study should be read tenuously.

While this thesis has attempted to argue that women in the middle have been forced to choose and forced to care when it comes to caring for elderly parents, it has failed to demonstrate that increased caregiving leads to a change for the worse in the temporal tensions in their lives. Some plausible reasons why this is so have been suggested. More importantly, it could be that this dimension of burden, which has not been examined as much as other burden concepts, was not really tapped into in the present study. What is perhaps more suggestive, however, is that caregivers find ways to cope with, and even to draw strength from, the demands placed upon them by caring. Indeed, the literature has claimed this. It can at least be advanced as a suggestion, based upon the results in this study, that temporal balance is not affected by objective caregiving demands. Caregiving is enormously complex, as are the particular life constellations of the persons who are involved with it. This study provides good support for the many researchers who advocate a shift in focus from enumerating the myriad negative consequences of particular forms of caregiving, to examining the successful coping strategies of caregivers. Only with this change of emphasis can we learn how to deal with the demands wittingly *and* unwittingly placed upon some of us by various social structures and belief systems.

While not all of the effects leading from the background variables to the five caregiving measures were either significant or in the hypothesized direction, and while virtually none of the variance in the five caregiving measures was accounted for, the particular approach employed should still be used in future research on caregiving. Researchers should be precise in specifying the particular components of care which they will investigate. Moreover, caregiving is a complex phenomenon, and we are only beginning to understand the social structures and ideological formations which somehow trap women into accepting the caring role, and at the same time sometimes forcing them to choose between the equally compelling demands of home, family, work, and a host of other commitments. In future, it would perhaps be advisable to reduce the number of variables employed by more precisely specifying the particular theoretical focus of interest. In this study, the attempt was made to essentially compose and test a large, omnibus model of caregiving using as many background concepts as could be mustered. There are few clearly specified theories of caregiving extant in the literature, and as more precise theoretical formulations are attempted, it may be easier to model more parsimonious pieces

of the social world.

It is to be remembered that while LISREL may be a powerful tool, it is only that. LISREL is a heuristic device enabling us to attempt to represent reality as best we can, a reality which is multi-faceted and forever changing. It is easy to be seduced by LISREL's methodological rigor into believing that it is the only means capable of helping us think about and model reality. It is important not to let the program, or any other analytical strategy, constrain our thinking. That is, whenever contemplating a LISREL model, we should always strive to retain the capability to think beyond the model, or to imagine alternative scenarios which may not even involve LISREL. This is where sound theoretical thinking can be especially important. A sound theory can force us to think beyond the particular analytical strategy employed, which then hopefully results in a better model.

As an example, in retrospect, a direct path should have been included from the concept sex (ξ_1) to the concept life balance (η_7). There are many kinds of things which some women do, such as being largely responsible for family leisure and holiday celebrations, which clearly have a direct impact on satisfaction with amount of leisure time. Some of these activities have little to do directly with caregiving, and thus it would seem reasonable that a direct path from sex to life balance be allowed. Although the modification index indicates that such a direct effect would make little difference *in this particular model*, this is not the end of the story. One can imagine a way of "salvaging" a zero effect. We can imagine an addition to the model where sex has a positive effect on life balance through some intervening variable, and also a negative effect on life balance through some other intervening variable. The positive and negative effects could, in essence, cancel out, and we would be left with a zero effect. This is what is meant by "salvaging" a zero effect. This particular example is used here to illustrate why researchers should always "think beyond a model" by trying to imagine alternative realities.

Any research is always a starting point for something better. It is to be emphasized that while some of the findings of this study were not the ones expected, this does not necessarily indicate that these results are "out there" in the real world. Once again, it should be stressed that these findings and conclusions must be read tenuously. They are a starting point for something better in the research on caregiving.

Table 5.1
Maximum likelihood estimates for Lambda Y

Lambda Y	*Housework*	*Main*	*Trans*	*Personal care*	*Financial help*	*Life balance*	R^2
Rep housework	1.0						.900
Rep maintenance		1.0					.900
Rep transportation			1.0				.900
Rep personal care				1.0			.900
Rep financial help					1.0		.900
Rep leisure						1.0	.800
Rep balance						0.509*	.294

* t-value = 32.3

Table 5.2
Maximum likelihood estimates for Beta and Gamma†
(sample 1)

Beta and Gamma (non zero rows)	*Sex*	*Age*	*Educ*	*Inc*	*Hrs wrkd*	*Lving alone*	*HH size*	*Par resid*	*Par toget*	*Volu*	*Hous work*	*Main*	*Trans*	*Per care*	*Finan help*	*Care givng*	R^2
House	1.23‡ (0.09)	-0.02		-0.11+ (-0.06)	0.01	-0.63	-0.15	-1.92‡ (-0.12)	0.07								0.026
Main	-1.09‡ (-0.07)	-0.05‡ (-0.08)		-0.01	0.02	-0.66	-0.10	-2.90‡ (-0.16)	0.49								0.033
Trans				-0.03	-0.02	1.74++ (0.05)	-0.33++ (-0.04)	-3.38‡ (-0.14)	-0.34								0.022
Per care	0.23	0.02++ (0.06)		-0.03	-0.00	0.04	-0.11+ (-0.04)	-0.25	-0.15								0.010
Finan help	0.26++ (0.06)			0.05‡ (0.08)					-0.23++ (-0.05)								0.009
Care																	1.000
Life balan			-0.05‡ (-0.13)	0.05‡ (0.18)	-0.02‡ (-0.27)	-0.03		0.33‡ (0.12)		0.00						0.001	0.072

\+ t-value ≥ 1.6
++ t-value ≥ 2.0
‡ t-value ≥ 3.0
† values in parentheses are the standardized coefficients

Table 5.3
Maximum likelihood estimates for Beta and Gamma†
(sample 0)

Beta and Gamma (non zero rows)	*Sex*	*Age*	*Educ*	*Inc*	*Hrs wrkd*	*Lving alone*	*HH size*	*Par resid*	*Par toget*	*Volu*	*Hous work*	*Main*	*Trans*	*Per care*	*Finan help*	*Care givng*	R^2
House	1.44‡ (0.09)	-0.04++ (-0.06)		-0.17++ (-0.09)	0.02	0.10	-0.20	-2.12‡ (-0.12)	-0.51								0.029
Main	-1.48‡ (-0.10)	-0.07‡ (-0.10)		-0.10	0.01	0.70	-0.38‡ (-0.07)	-3.37‡ (-0.19)	0.41								0.036
Trans				-0.06	-0.00	-0.03	-0.14	-2.41‡ (-0.10)	-1.09++ (-0.05)								0.014
Per care	0.17	0.04‡ (0.10)		-0.07+ (-0.06)	0.00	0.45	-0.06	-0.26	0.14								0.011
Finan help	0.26++ (0.04)			0.06‡ (0.07)					-0.16								.005
Care																	1.000
Life balan			-0.04‡ (-0.11)	0.04‡ (0.12)	-0.02‡ (-0.23)	-0.15+ (-0.03)		0.15++ (0.05)		0.00						0.001	0.051

\+ t-value ≥ 1.6
++ t-value ≥ 2.0
‡ t-value ≥ 3.0
† values in parentheses are the standardized coefficients

Notes

1 Sayer (1991: x) has called 'time' the "...most precious of modern commodities,..."

2 Michon (1986) says that anyone approaching the subject will be reminded that time, like everything else, has had an evolution, and thus, a beginning. Contrarily, Foucault is one who doesn't seem to subscribe in 'beginnings.' If they are granted, at least, they are, in Foucault's mind, not really worth considering (see Foucault 1984).

3 Some have asserted that it is perhaps the other way around — ie time has been taken for granted by the natural and physical sciences.

4 Simmel (1978 [1900]: 485) mentions that all sequences of our life are regulated by upward and downward rhythms.

5 "The everyday authority of time is, even in a permissive society, so complete that it rarely appears as problematic, and if it is not problematic to the people who are the subjects it will not be all that problematic to the other people who are their not so eager students." (Young and Schuller 1988: 3)

6 Mary Douglas (1978: 14) argues that Parsons's social system is one of the many theories of social action which separate belief from action.

7 Many different theorists conceptualize various elements of temporal pattern. As an example, a similar theoretical scheme to Zerubavel's is provided by Lauer (1981), who suggests five basic elements in the temporal pattern of any social phenomenon: periodicity, tempo, timing, duration and sequence. Similarly, Aminzade (1992) explores the manner in which four different concepts of time (duration, pace, trajectory and cycle) have been used in recent historical social science.

8 I am uncertain as to what Zerubavel implies by the term 'natural time.' The possibility exists that Zerubavel is himself confused with his definition of 'time.' For a discussion and critique of the natural-social distinction, see Latour (1991; 1992).

9 The key point Zerubavel is attempting to make is that the concept of 'normalcy' must contain some element of 'abnormality' if it is to have any meaning. Thus, he cites Benjamin Lee Whorf, who says that if a rule has *no* exceptions, it *cannot* be recognized as a rule or anything else (Zerubavel 1981: 22). This is similar to Goffman's contention that the key element to look for in any social regularity is 'surprise.' Tabboni (1990: 433), in discussing rules, says something similar:

> If we do not take into consideration the experiences which constitute the background and support of a normative system, either ensuring that the rules are enforced and guaranteeing their legitimacy or alternatively providing evidence of fragility and precariousness, then we cannot be fully aware of the true nature of socially expected durations.

10 Their explanation (1937: 619-620) is worth quoting:

> A homogeneity of social beats and pulsations of activity makes unnecessary astronomical frames of reference. Each group, with its intimate nexus of a common and mutually understood rhythm of social activities, sets its time to fit the round of its behavior. No highly complex calculations based on mathematical precision and nicety of astronomical observation are necessary

to synchronize and co-ordinate the societal behavior.

Durkheim (1954 [1912]: 10-11), of course, presented a very similar idea: "The divisions into days, weeks, months, years, etc., correspond to the periodical recurrence of rites, feasts, and public ceremonies. A calendar expresses the rhythm of the collective activities, while at the same time its function is to assure their regularity."

11 Eisenstadt (1988), in a more obscure and recondite manner, makes a similar point. Underscoring the importance of the symbolic in analyzing social change, he states: "Hence it is impossible to analyze social change such as revolutions without taking into account either ways in which symbolic and power components were interwoven in the situations in which they developed, or their own cosmologies." Eisenstadt, in his discussion of the relation between symbolism and personal cosmology, is no doubt drawing on the ideas of Douglas (1973) in her *Natural symbols*.

12 For some applications of SEDs, see Merton et al (1951) and Sidel (1966), with the latter focusing especially on Craftown.

13 Merton (1968; 1984) elaborated on the concept of duration. In *Social theory and social structure* (1968: 366), he stated that the expected duration of the group would presumably affect such matters as the self-selection of members, and group structure and power distribution, and hence would constitute an important differentiating factor in group properties.

14 This is true, and this is just like studies of aging and caregiving.

15 An actual example is useful here. I recall the following passage from one of my sister-in-law's letters: "Someone once foolishly asked me, 'Well what do you do at home all day?' IE: Go on school field trips with Noland, meet with the school speech therapists, go to Noland's class as parent helper, take Noland to the local dentist, take Noland to the local doctor, pick up Claude's and Noland's and my prescriptions, take Noland to the optometrist, make appointments and arrange accomodation for out-of-town medical trips, pay the bills and rent and do the mail, grocery shopping, keep income tax medical expenses files, birthday parties, homework with Noland, pack up for hunting and medical trips and unpack, etc., etc., etc., PLUS all the rest of the ordinary day-to-day housework and parenting that piles up all week when both of us are working!" (from a 20 May 1993 letter)

16 But see Mancini and Blieszner (1989) for a seemingly contradictory view.

17 Mancini and Blieszner (1989: 279) raise an interesting concern, but it is one which, unfortunately, this thesis can't explore:

> A related aspect of spending time in one another's presence pertains to the nature of support in the relationship, that is, the nature of instrumental and emotional exchange and reciprocity. This question was also asked some years ago, but it would seem that the intricacies of interdependence have yet to be captured. It has been assumed that what one generation does for another is a behavioral indicator of concern, respect, caring, and the quality of family life.

18 Chappell's conclusion that the elderly have strong social support ties appears somewhat attenuated by Stone (1988: 29), who stated the following in his introductory report on

the General Social Survey:

> If we wish to move in the direction of influences about the sorts of informal supports that the persons living alone might have had regularly, we need to find out how frequently the members of the extended family and close-friend structure were contacted (...) A tie is called 'inactive' when the respondent has seen every person with whom he or she has such a tie less often than monthly *and* contacted (by phone or letter) such a person less often than weekly.

Based on this assumption, Stone (1988: 29) concluded, after taking frequency of contact into account, that "...a substantial minority (over 30 %) of those aged 80 and over were in situations with weaker than average structures for potential social supports."

19 As Dewit et al (1988: 59-60) state:

> It is plausible to assume that at some point, a distance threshold may be reached when intergenerational contact is forced to take on a different form. Evidence to support this claim originates from US research on kin interaction indicating that a majority of respondents report a strong desire for kin to live closer than they currently did, and, furthermore, that this desire for increased contact is attenuated for those relatives who live outside of the respondents' states.

20 This form of argument appears substantively close to rational choice theory, which argues that determination of action is based principally on a reward-punishment schema predicated on a cost-benefit calculus. While perhaps being unpopular in modern day social science theory, it has at least not been detrimental in the research career of Gary Becker, a recent Economics Nobel laureate who made extensive use of this theoretical perspective particularly in his theory of children as "consumer durables." Becker introduced an economic analysis of fertility (sometimes called the "new home economics") which treated children as if they were consumer goods requiring both time and money for parents to acquire. He further assumed that each couple exercised perfect economic rationality and also practiced perfect contraceptive effectiveness (Becker 1960). Judith Blake (1968), in a famous response, criticized his hypothesis on both theoretical and empirical grounds, and argued that the analogy with consumer durables was inapplicable because parents are producers as well as consumers of children, children are not just instrumentalities capable of being bought and sold, and that the utilities involved in having them (and hence the associated "tastes" for children) are built into the institutional structure of reproduction.

21 The apparent distance on the geographical distance scale was expressed rather crudely in units of time, so the authors deleted the first and last category, and then converted the rest into units of time in terms of hours from the focal person by constructing a range of values around each category and arriving at the mid point value.

22 Johnson (1983), in a study of San Francisco families, found that children were more likely to think that their parents had higher expectations for their support than the parents themselves described. In addition, children described more ambivalence and conflict in their role as caregiver, and reported more competing commitments stemming from the demands of their social life.

23 This is corroborated by findings from the 1993 Alberta Survey, which found that 53

percent of Albertans agreed that they would rather die than be dependent in an old and frail state! Sixty-eight percent of survey respondents would like to have professional care givers come to their home. Forty-seven percent agreed that they would prefer a long term care facility, and only 38 percent of Albertans preferred that their families look after them in such a feeble state.

[24] Bella (1990), using the celebration of Christmas as a backdrop, also claims that women are responsible for kinkeeping.

[25] Surprisingly, the authors seem to subscribe to this myth as well — it is curious that they claim that "In spite of the incidence of centres for senior citizens and similar facilities, many old people will be socially isolated." (1985: 75) This is contradictory, as has already been discussed, to the mainstream literature.

[26] The eight items included such items as whether the caregiver: takes part in groups and organized activities less; takes part in thatre, concerts and shows less; visits family and friends less; takes part in volunteer activities less; feels social life has suffered because of elder; and doesn't have enough time for self.

[27] Cantor (1983), however, seems to detract slightly from this view, even though I do not think that this is her intent. She says that sometimes researchers and policy makers have erroneously assumed that informal caregivers are family members and primarily women. Several crucial variables, such as type of relationship, sex, age health and work status of the caregiver have become homogenized, and this has resulted in "...obscuring the differences among various groups of caregivers and the types of stress each may be experiencing in the process of giving assistance." (1983: 597) However, in her New York City study of elderly clients and their primary caregivers, she found that the children caregivers were mainly married women with families. In addition, caregivers who were not children, friends and neighbors, were almost all women (1983: 599). Moreover, she found that strain was more likely to be associated with women (1983: 601). It is thus curious, and contradictory, that she would claim that it is an "erroneous" assumption that informal caregivers arre family members and primarily women.

There are also examples of what can only be described as bad research. It is amazing, for example, to hear Hawranik (1985: 19-20) say in 1985 that there has been little research dealing with how caregivers cope when caring for elderly parents. She claimed that the majority of the research has been cross-sectional in nature, that this research has been so minimal that no definite conclusions have been able to be formulated, and that these studies don't attempt to prove any statistically significant relationships or correlations between variables! This, of course, was a patently false assertion in 1985. In her study of 60 families in rural Manitoba (with no mention of sampling design), though she did find that the majority of primary caregivers were daughters, she stated that she found no relationship between coping strategies of the caregiver and three variables: health status of the parent, social adjustment of the parent, and the support systems of the caregiver and parent. She also stated that this unexpected finding could have been due to a number of factors including, amazingly, because "...in the final examination, these variables may not be important influences upon the caregiver's coping." (1985: 21) This seems an amazing claim.

[28] The evidence on this point, however, seems to be somewhat mixed. Johnson (1983), for example, reported that husbands as caregivers seek more help from formal

providers and have more frequent contact with children (who visit their mother) and thus suffer less stress. Noelker and Wallace (1985: 33) do say, though, that differences have consistently been found between spouse caregivers' reports, with elderly wives experiencing greater time restrictions and restrictions in group and social activities, and negative health consequences than husbands.

29 It is unfortunate that caregivers should perceive that their "loyalties" are divided. This ably demonstrates, once again, the fact that many caregivers are not only forced to *care*, but also that they are forced to *choose*.

30 Much of the gerontological (and other) literature has made it apparent that there has been little recognition of the oft noted methodological proscription against using tests of statistical significance when interpreting results from non-random samples. In this case, it does not appear convincing that a non random sample of 178 is good evidence against a prevailing "stereotype."

31 While this thesis cannot delve into the concept of leisure itself, an interesting account of the androcentric nature of leisure is provided by Bella (1990). She cites the two problems with leisure research as being the reliance on time-budget studies, which ignores the relational context which gives meaning to activities, and the familist assumptions of family leisure, which tends to ignore the reality that family leisure must be organized by someone.

32 Toffler (1971) said that "future shock" results when self temporal panic becomes transformed during eras of rapid social change.

33 There are generalized cultural norms of "interaction" time, say the authors, and they mention turn-taking (presumably in conversations). This idea, of course, is a mainstay of the ethnomethodological research tradition, whose studies in conversational analysis, as well as breaching experiments, are well known.

34 As Susan McDaniel has pointed out, this is still a contestable claim.

35 I had wanted to include an occupational prestige measure, along with education and income, so I would be able to include an SES concept in the model. Unfortunately, because of the coding scheme employed by Statistics Canada for this variable in the 1990 GSS, occupation could not be converted to either standard Blishen or Pineo-Porter codes.

36 This is a strange interpretation, but only because of the particular question design of the GSS survey. If a respondent scores 1 on this variable, it indicates that they have either one or both parents living with them. If they have one parent living with them, then they are likely providing a good deal of caregiving to that parent and less caregiving to the parent not living with them. On the other hand, if a respondent scores 0 on this variable, it indicates that they have no parents living with them (ie at least one and possibly two parents living elsewhere) and would thus at least be in position to have a score on the caregiving variables. They would, in essence, be providing care but only by *default* (again, due to the strange question routing in the survey).

37 The 1985 GSS did examine some social support questions, but these questions (which included questions on social activities, help given to others and household activities

support) were asked only of persons aged 55 years and over.

38 A subsequent run was conducted using a covariance matrix created via pairwise deletion (with N = 3567) to determine if this would make any difference. The X^2 statistic was 102.2, a marginal reduction from the basic X^2 of 113.6, and a few of the Gamma values were slightly different from the run using the covariance matrix created via listwise deletion. In sum, none of the conclusions arrived at would require revising were pairwise deletion to have been used. For a summary of the results of the model run using the other random sample, see note 51.

39 Variables attempting to measure attitudinal states of individuals are often acknowledged to contain large amounts of unreliability. That is, the prevailing view, I think, is that it is always difficult to obtain a valid or reliable measure of how happy or satisfied an individual may be. Which is to say, much of the conceptual thinking seems based on the now (in?)famous Nisbet and Wilson "truism" of "telling more than we can know." Without wanting to be difficult, I prefer the alternate conception of, for example, Smith and Miller (1978) [summarized in Sabini and Silver (1981)]. Namely, it is just as reasonable to assume that people *do* have access to their cognitive processes. Thus, I assume that respondent reports of life satisfaction and happiness are to be taken at face value. That is, respondents are able to answer unambiguously and fairly transparently when asked, for example, how happy they are. The alternate conceptualization of this is, however, that while individuals may be able to answer unambiguously, the particular question posed may nonetheless *still* be a poor question in the sense that it does not "tap into" the underlying concept. Thus, we arrive back at the Charybdis and Scylla of validity and reliability. It seems to me that researchers may perhaps have dissimilar reasons and motivations when assessing proportion of error variance: Two researchers may assess a proportionate error of .01 to the same indicator, one because they think respondents can easily answer the question even though it is a poor question, and the other because they think it's a good question, but can't be easily answered.

40 In addition, Hayduk (1987: 122) states that interview items attempting to have respondents think about matters they do not routinely consider should have a higher assessed proportion of error variance associated with their indicators.

41 For an extended philosophical discussion on the consequences of causality for the social sciences, see Derksen (1988).

42 The following discussion of the model and ensuing results presumes a working knowledge of the LISREL program. Readers are referred to chapter four of Hayduk (1987) for an excellent summary of LISREL notation and an explanation of all of the different matrices involved.

43 Of the many novel insights which one gains from being exposed to LISREL, one of the more interesting and challenging ones is the *absolute requirement* to view theories and models as being two quite similar kinds of *fictions*.

44 Hayduk (1987: 212-215), using an extended example of SES, contains a very good discussion of how concepts can be defined as composites of indicators. Readers are urged to refer to this section for a much clearer understanding of this Lisrelite "trick" than the present author can provide. Besides this, another practical application of this alternative modeling strategy within a demographic framework may be found in

Chowdhury (1991: 198 ff).

45 Complete output for this LISREL run is included in the Appendix.

46 It is to be remembered that the X^2 statistic is highly dependent on N, and becomes able to detect smaller and smaller discrepancies as N increases. One procedure for providing a more realistic X^2 is to recalculate what the X^2 value would be with some smaller N (such as Hoelter's (1983) suggestion of 200 as a "critical-N," discussed in Hayduk 1987: 168-169). Since $X^2 = 2nF$ (the minimum of the fit function), this is easily done. For the present model, an N of 200 would have resulted in a X^2 of 6.5 (with 50 degrees of freedom) — highly insignificant.

47 In previous runs, when minor errors in model specification were made, it was discovered that there were large residuals between several of the caregiving variables. What this indicates is that there are other common causes contributing to these caregiving concepts which have not been modeled. Thus, for this run, the following psi coefficients, corresponding to the largest normalized residuals, were freed: ψ_{21}, ψ_{31}, ψ_{32}, ψ_{41}, ψ_{42}, ψ_{43} and ψ_{53}. What I allow by performing this change (ie the *theoretical implication*) is that I am willing to admit that there are other variables "out there" which are stronger common causes of the caregiving concepts chosen. I do not feel that this allowance, however, alters the basic premises of my theoretical structure.

48 Discussion of whether I, as a researcher, would be prepared to allow such changes to my theoretical thinking is reserved for later in this chapter.

49 In fact, since financial help contributes so little to the caregiving concept of η_6, I would drop this concept from any further model attempts.

50 This reporting structure is partly based on Table 2 provided by Hayduk and Avakame (1991). This seems to be a very useful and informative format for the presentation of results.

51 This may be true in general, but is not true in the context of large Ns and standardized slopes. I was exposed to this issue early in my methodological training, and was heavily influenced by some seminal articles on the subject, including Selvin (1957), Morrison and Henkel (1969) and Skipper et al (1967).

52 Since the effective sample size was so large (over 8,000 cases), it was decided to split the sample into two random halves, perform all of the basic model runs on one sample (sample 1) and subsequently run the same model on the alternate sample (sample 0). In this way, one is able to "capitalize on chance," or, in other words, to perform the same analysis on a different random sample but using the same overall data. In this manner, a type of "re-test" can be performed on the data. Running the same model with a different random sample produced some different and somewhat surprising results, and the maximum likelihood estimates for this alternate random sample are listed in Table 5.3. If one compares Table 5.2 and Table 5.3, one notices some differences, only the major ones of which are discussed here. The coefficient for *age* on *housework* is significant using one of the samples, but not the other. The coefficient for *living alone* on

transportation is 1.74 and significant in one sample, but is -0.03 and does not reach significance in the other sample. Also, the gamma value for *living alone* on *life balance* is significant in one sample but not in the other. The greatest changes are found in the gammas for household size on *maintenance*, *transportation* and *personal care*. Each of the three coefficients change from being significant in one sample to being not significant in the other, and some of them display a fairly substantive change in their values. As well, some of the coefficients for the effect of *parent residence* on the various endogenous concepts are substantively different. Finally, the gamma for *parents together* on *transportation* is -1.09 and significant in one sample, but is -0.34 and not significant in the other sample. In sum, while these changes do not radically alter the overall conclusions, the differences obtained are *not* ones which would be expected using a different randomly drawn sample on the same data. Other than that of *chance*, the author has no explanations for what could have accounted for such unexpected results.

References

Adams, Bert N. 1968. *Kinship in an urban setting*. Chicago: Markham.

Aminzade, Ronald. 1992. "Historical sociology and time." *Sociological Methods & Research* 20 (4): 456-480.

Aronson, Jane. 1985. "Family care of the elderly: Underlying assumptions and their consequences." *Canadian Journal on Aging* 4 (3): 115-125.

Bankoff, Elizabeth A. 1983. "Aged parents and their widowed daughters: A support relationship." *Journal of Gerontology* 38 (2): 226-230.

Becker, Gary. 1960. "An economic analysis of fertility." pp 209-240 in *Demographic and economic change in developed countries*. Princeton: National Bureau of Economic Research.

Bella, Leslie. 1990. "An exploration of the work women do to produce and reproduce family leisure." pp 79-89 in Vanaja Dhruvarajan (ed). *Women and well-being*. Montreal: McGill-Queen's University Press.

Bengtson, Vern, Carolyn Rosenthal and Linda Burton. 1990. "Families and aging: Diversity and heterogeneity." pp 263-287 in Robert H Binstock and Linda K George (eds). *Handbook of aging and the social sciences*. 3rd edition. San Diego: Academic Press.

Blake, Judith. 1968. "Are babies consumer durables?" *Population Studies* 22: 5-25.

Blieszner, Rosemary. 1986. "Trends in family gerontology research." *Family Relations* 35 (4): 555-562.

Bridgman, Percy W. 1932. "The concept of time." *The Scientific Monthly* 35: 97-100.

Brody, Elaine M. 1981. "'Women in the middle' and family help to older people." *Gerontologist* 21 (5): 471-480.

_____. 1985. "Parent care as a normative family stress." *Gerontologist* 25 (1): 19-29.

Brody, Elaine M and Claire B Schoonover. 1986. "Patterns of parent-care when adult daughters work and when they do not." *Gerontologist* 26 (4): 372-381.

Brody, Elaine M, Pauline T Johnsen, Mark C Fulcomer and Abigail M Lang. 1983. "Women's changing roles and help to elderly parents: Attitudes of three generations of women." *Journal of Gerontology* 38 (5): 597-607.

Brody, Elaine M, Pauline T Johnsen and Mark C Fulcomer. 1984. "What should adult children do for elderly parents? Opinions and preferences of three generations of women." *Journal of Gerontology* 39 (6): 736-746.

Cantor, Marjorie H. 1979. "Neighbors and friends: An overlooked resource in the informal support system." *Research on Aging* 1 (4): 434-463.

_____. 1983. "Strain among caregivers: A case study of experience in the United States." *Gerontologist* 23 (6): 597-604.

Chappell, Neena L. 1983. "Informal support networks among the elderly." *Research on Aging* 5 (1): 77-99.

_____. 1985. "Social support and the receipt of home care services." *Gerontologist* 25 (1): 47-54.

_____. 1990. "Aging and social care." pp 438-454 in Robert H Binstock and Linda K George (eds). *Handbook of aging and the social sciences*. 3rd edition. San Diego: Academic Press.

_____. 1991. "Living arrangements and sources of caregiving." *Journal of Gerontology* 46 (1): S1-8.

Chenoweth, Barbara. 1986. "Dementia: The experience of family caregivers." *Gerontologist* 26 (3): 267-272.

Chowdhury, Fakhrul Islam. 1991. *Fertility in Bangladesh: Explanations through structural equation models*. Unpublished PhD dissertation. Department of Sociology, University of Alberta.

Connidis, Ingrid Arnet and Lorraine Davies. 1992. "Confidants and companions: Choices in later life." *Journal of Gerontology* 47 (3): S115-S122.

Deimling, Gary T and David M Bass. 1986. "Symptoms of mental impairment among elderly adults and their effects on family caregivers." *Journal of Gerontology* 41 (6): 778-784.

Derksen, Linda. 1988. *The bias of science: Implications for the sociological imagination*. Unpublished honors essay. Department of Sociology, University of Alberta.

Dewit, David J, Andrew V Wister and Thomas K Burch. 1988. "Physical distance and social contact between elders and their adult children." *Research on Aging* 10 (1): 56-80.

Douglas, Mary. 1973. *Natural symbols: Explorations in cosmology*. Harmondsworth: Penguin.

_____. 1978. "Cultural bias." Occasional paper no 34. London: Royal Anthropological Institute of Great Britain and Ireland.

Duncan, Otis Dudley. 1975. *Introduction to structural equation models*. New York: Academic Press.

Durkheim, Emile. 1954 [1912]. *The elementary forms of the religious life*. London: Allen & Unwin.

Eisenstadt, S N. 1988. "The order maintaining and order transforming dimensions of culture." Unpublished paper prepared for the Third German-American Sociological Theory Conference, Bremen, Germany.

Fitting, Melinda, Peter Rabins, M Jane Lucas and James Eastham. 1986. "Caregivers for dementia patients: A comparison of husbands and wives." *Gerontologist* 26 (3): 248-252.

Foucault, Michel. 1984. *The Foucault reader*. Edited by Paul Rabinow. New York: Pantheon Books.

Frank, Arthur W. 1991. *At the will of the body: Reflections on illness*. Boston: Houghton Mifflin.

Gee, Ellen M and Susan A McDaniel. 1992. "Social policy for an aging society." *Journal of Canadian Studies* 28 (1): 139-152.

George, Linda K and Lisa P Gwyther. 1986. "Caregiver well-being: A multidimensional examination of family caregivers of demented adults." *Gerontologist* 26 (3): 253-259.

Germain, Claude. 1975. *Singing your song: Poems and lines*. Edmonton: White Pelican Publications.

Gilhooly, Mary L M. 1984. "The impact of care-giving on care-givers: Factors associated with the psychological well-being of people supporting a dementing relative in the community." *British Journal of Medical Psychology* 57: 35-44.

Guberman, Nancy. 1990. "The family, women, and caregiving: Who cares for the caregivers?" pp 67-78 in Vanaja Dhruvarajan (ed). *Women and well-being*. Montreal: McGill-Queen's University Press.

Hawranik, Pamela. 1985. "Caring for aging parents: Divided allegiances." *Journal of Gerontological Nursing* 11 (10): 19-22.

Hayduk, Leslie A. 1987. *Structural equation modeling with LISREL: Essentials and advances*. Baltimore and London: Johns Hopkins University Press.

Hayduk, Leslie A and Frank Edem Avakame. 1991. "Modeling the deterrent effect of sanctions on family violence: Some variations on the deterrence theme." *Criminometrica* 6/7: 19-37.

Hooyman, Nancy R and Rosemary Ryan. 1987. "Women as caregivers of the elderly: Catch-22 dilemmas." pp 143-177 in Josefina Figueira-McDonough and Rosemary Sarri (eds). *The trapped woman: Catch-22 in deviance and control*. Newbury Park, CA: Sage.

Horowitz, Amy. 1985. "Sons and daughters as caregivers to older parents: Differences in role performance and consequences." *Gerontologist* 25 (6): 612-617.

Horowitz, Amy and Lois W Shindelman. 1983. "Reciprocity and affection: Past influences on current caregiving." *Journal of Gerontological Social Work* 5 (3): 5-20.

Johnson, Colleen Leahy. 1983. "Dyadic family relations and social supports." *Gerontologist* 23 (4): 377-383.

Jöreskog, Karl G and Dag Sörbom. 1989. *LISREL 7: A guide to the program and applications*. 2nd edition. Chicago: SPSS.

Jutras, Sylvie and France Veilleux. 1991. "Informal caregiving: Correlates of perceived burden." *Canadian Journal on Aging* 10 (1): 40-55.

Kaden, Joan and Susan A McDaniel. 1990. "Caregiving and care-receiving: A double bind for women in Canada's aging society." *Journal of Women & Aging* 2 (3): 3-26.

Kinney, Jennifer M and Mary Ann Parris Stephens. 1989. "Hassles and uplifts of giving care to a family member with dementia." *Psychology and Aging* 4 (4): 402-408.

Kraus, Arthur S. 1984. "The burden of care for families of elderly parents with dementia." *Canadian Journal on Aging* 3 (1): 45-51.

Lang, Abigail M and Elaine M Brody. 1983. "Characteristics of middle-aged daughters and help to their elderly mothers." *Journal of Marriage and the Family* 45 (1): 193-202.

Latour, Bruno. 1991. "A turn after the social turn: Easing science studies into the non-modern world." Unpublished paper presented at the Disunity and Contexualism conference, Stanford University.

_____. 1992. "A 'matter' of life and death — or should we avoid hylozoism." Unpublished paper.

Lauer, Robert M. 1981. *Temporal man: The meaning and uses of social time*. New York: Praeger.

Leigh, Geoffrey K. 1982. "Kinship interaction over the family life span." *Journal of Marriage and the Family* 44 (1): 197-208.

Lewis, J David and Andrew J Weigert. 1981. "The structures and meanings of social time." *Social Forces* 60 (2): 432-462.

Lopata, Helena Znaniecka and Kathleen Fordham Norr. 1980. "Changing commitments of American women to work and family roles." *Social Security Bulletin* 43 (6): 3-14.

Mancini, Jay A and Rosemary Blieszner. 1989. "Aging parents and adult children: Research themes in intergenerational relations." *Journal of Marriage and the Family* 51 (2): 275-290.

Marcus, Lotte and Valerie Jaeger. 1984. "The elderly as family caregivers." *Canadian Journal on Aging* 3 (1): 33-43.

McDaniel, Susan A. 1989b. "Les femmes dans un Canada en voie de vieillissement: Une approche féministe." *Cahiers québecois de démographie* 18 (1): 137-156.

_____. 1992b. "Bridges and frontiers: Families, women and work in an aging Canada." Keynote address to the 21st annual meeting of the Canadian Association of Gerontology, Edmonton, Alberta, 24 October. [Reprinted as *Research Discussion Paper No 96*, Population Research Laboratory, University of Alberta]

_____. 1992c. "Life rhythms and caring: Aging, family and the state." 23rd Annual Sorokin Lecture, University of Saskatchewan, Saskatoon, Saskatchewan, 28 January.

McDaniel, Susan A and Allison L McKinnon. 1993. "Gender differences in informal support and coping among elders: Findings from Canada's 1985 and 1990 General Social Surveys." *Journal of Women and Aging* 5 (2): 79-98.

McDaniel, Susan A and Ellen M Gee. 1993. "Social policies regarding caregiving to elders: Canadian contradictions." *Journal of Aging and Social Policy* 5 (1 and 2): 57-72.

McGrath, Joseph E and Janice R Kelly. 1986. *Time and human interaction: Toward a social psychology of time*. New York and London: Guilford Press.

Merton, Robert K. 1968. *Social theory and social structure*. Revised edition. New York: Free Press.

_____. 1984. "Socially expected durations: A case study of concept formation in sociology." pp 262-286 in W W Powell and Richard Robbins (eds). *Conflict and consensus: A festschrift for Lewis A Coser*. New York: Free Press.

Merton, R K, P S West and M Jahoda. 1951. *Patterns of social life: Explorations in the sociology of housing*. New York: Bureau of Applied Social Research, Columbia University.

Michon, John A. 1986. "J T Fraser's 'levels of temporality' as cognitive representations." pp 51-66 in J T Fraser, N Lawrence and F C Haber (eds). *Time, science, and society in China and the West: The study of time V*. Amherst: University of Massachusetts Press.

Mindel, Charles H and Roosevelt Wright, Jr. 1982. "Satisfaction in multigenerational households." *Journal of Gerontology* 37 (4): 483-489.

Mitchell, Jim and Jasper C Register. 1984. "An exploration of family interaction with the elderly by race, socioeconomic status, and residence." *The Gerontologist* 24 (1): 48-54.

Montgomery, R J V, J G Gonyea and N R Hooyman. 1985. "Caregiving and the experience of subjective and objective burden." *Family Relations* 34 (1): 19-26.

Morrison, Denton E and Ramon E Henkel. 1969. "Significance tests reconsidered." *American Sociologist* 4 (2): 131-140.

Mutran, Elizabeth and Donald C Reitzes. 1984. "Intergenerational support activities and well-being among the elderly: A convergence of exchange and symbolic interaction perspectives." *American Sociological Review* 49 (1): 117-130.

Myles, John. 1991. "Editorial: Women, the welfare state and care-giving." *Canadian Journal on Aging* 10 (2): 82-85.

Noelker, Linda S and Robert W Wallace. 1985. "The organization of family care for impaired elderly." *Journal of Family Issues* 6 (1): 23-44.

Notar, Margaret and Susan A McDaniel. 1986. "Feminist attitudes and mother-daughter relationships in adolescence." *Adolescence* 21 (81): 11-21.

Poulshock, S Walter and Gary T Deimling. 1984. "Families caring for elders in residence: Issues in the measurement of burden." *Journal of Gerontology* 39 (2): 230-239.

Pratt, Clara C, Vicki L Schmall, Scott Wright and Marilyn Cleland. 1985. "Burden and coping strategies of caregivers to Alzheimer's patients." *Family Relations* 34 (1): 27-33.

Reece, Daniel, Thomas Walz and Helen Hageboeck. 1983. "Inter-generational care providers of non-institutionalized frail elderly: Characteristics and consequences." *Journal of Gerontological Social Work* 5 (3): 21-34.

Robinson, Betsy and Majda Thurnher. 1979. "Taking care of aged parents: A family cycle transition." *Gerontologist* 19 (6): 586-593.

Rosenthal, Carolyn J. 1985. "Kinkeeping in the familial division of labor." *Journal of Marriage and the Family* 47 (4): 965-974.

_____. 1987. "Aging and intergenerational relations in Canada." pp 311-342 in *Aging in Canada: Social perspectives*. 2nd edition. Victor W Marshall (ed). Markham, Ontario: Fitzhenry & Whiteside.

Sabini, John and Maury Silver. 1981. "Introspection and causal accounts." *Journal of Personality and Social Psychology* 40 (1): 171-179.

Sayer, Derek. 1991. *Capitalism and modernity: An excursus on Marx and Weber*. London and New York: Routledge and Kegan Paul.

Selvin, Hanan C. 1957. "A critique of tests of significance in survey research." *American Sociological Review* 22 (4): 519-527.

Shanas, Ethel. 1979a. "Social myth as hypothesis: The case of the family relations of old people." *Gerontologist* 19 (1): 3-9.

_____. 1979b. "The family as a social support system in old age." *Gerontologist* 19 (2): 169-174.

Sharron, Avery. 1982. "Dimensions of time." *Studies in Symbolic Interaction* 4: 63-89.

Sidel, P S. 1966. "Residential mobility in Craftown." Unpublished doctoral dissertation, Columbia University.

Simmel, Georg. 1978 [1900]. *The philosophy of money*. Translated by Tom Bottomore and David Frisby. London: Routledge and Kegan Paul.

Skipper, James K Jr, Anthony L Guenther and Gilbert Nass. 1967. "The sacredness of .05: A note concerning the uses of statistical levels of significance in social science." *American Sociologist* 2: 16-18.

Sorokin, Pitirim A and Robert K Merton. 1937. "Social time: A methodological and functional analysis." *American Journal of Sociology* 42 (5): 615-629.

Statistics Canada. 1989. "General Social Survey: Family and friends questionnaire — ages 15 years and over." Ottawa: Statistics Canada.

Stoller, Eleanor Palo. 1982. "Sources of support for the elderly during illness." *Health and Social Work* 7 (2): 111-122.

_____. 1983. "Parental caregiving by adult children." *Journal of Marriage and the Family* 45 (4): 851-858.

Stone, Leroy O. 1988. *Family and friendship ties among canada's seniors: An introductory report of findings from the General Social Survey*. Ottawa: Minister of Supply and Services Canada. Catalogue No 89-508.

Storm, Christine and Thomas Storm. 1985. "Obligations for care: Beliefs in a small Canadian town." *Canadian Journal on Aging* 4 (2): 75-85.

Strain, Laurel A and Barbara J Payne. 1992. "Social networks and patterns of social interaction among ever-single and separated/divorced elderly Canadians." *Canadian Journal on Aging* 11 (1): 31-53.

Sturt, Mary. 1925. *The psychology of time*. London: Kegan Paul Trench, Trubner & Co.

Tabboni, Simonetta. 1990. "Robert K Merton's contribution to sociological studies of time." pp 427-436 in Jon Clark, Celia Modgil and Sohan Modgil (eds). *Robert K Merton: Consensus and controversy*. London and New York: Falmer Press.

Thompson, Edward H Jr and William Doll. 1982. "The burden of families coping with the mentally ill: An invisible crisis." *Family Relations* 31 (3): 379-388.

Toffler, Alvin. 1971. *Future shock*. New York: Bantam.

Townsend, Aloen, Linda Noelker, Gary Deimling and David Bass. 1989. "Longitudinal impact of interhousehold caregiving on adult children's mental health." *Psychology and Aging* 4 (4): 393-401.

Walker, Alan. 1991. "The relationship between the family and the state in the care of older people." *Canadian Journal on Aging* 10 (2): 94-112.

Young, Michael and Tom Schuller. 1988. "Introduction: Towards chronosociology." pp 1-16 in Michael Young and Tom Schuller (eds). *The rhythms of society*. London and New York: Routledge.

Zarit, Steven H, Pamela A Todd and Judy M Zarit. 1986. "Subjective burden of husbands and wives as caregivers: A longitudinal study." *Gerontologist* 26 (3): 260-266.

Zerubavel, Eviatar. 1981. *Hidden rhythms: Schedules and calendars in social life*. Chicago and London: University of Chicago Press.

Appendix

```
21 Dec 93   SPSS-X RELEASE 3.0 FOR IBM MTS
19:06:07    University of Alberta

For                    University of Alberta                    License Number 30
This software is functional through January 31, 1999.

Try the new SPSS-X Release 3.0 features:

* Interactive SPSS-X command execution          * Improvements in:
* Online Help                                   *   REPORT
* Nonlinear Regression                          *   TABLES
* Time Series and Forecasting (TRENDS)          *   Simplified Syntax
* Macro Facility                                *   Matrix I/O

See SPSS-X User's Guide, Third Edition for more information on these features.

   1  0  title 'CAREGIVING AND LIFE HARMONY'
   2  0  file handle #8/name='samll.cov'
   3  0  input program
   4  0  numeric #
   5  0  end file
   6  0  end input program
   7  0  userproc name=lisrel
   8  0  Title G C GERMAIN - Thesis Run 1
   9  0  DA NI=18 NO=3519 MA=CM
  10  0  CM UN=8 FU FO
  11  0  (18F10.4)
  12  0  LA
  13  0  'Housewrk' 'Maintnce' 'Transpor' 'Personal' 'Financal' 'Leisure'
  14  0  'Balance' 'Sex' 'Age' 'Education' 'Employmt' 'Income' 'Hrs.wrkd'
  15  0  'Alone' 'HH.size' 'Living' 'Together' 'Volunter' /
  16  0  MO NY=7 NX=11 NE=7 NK=11 LY=FU,FI LX=FU,FI BE=FU,FI GA=FU,FI C
  17  0    PH=SY,FR PS=SY,FI TE=SY,FI TD=SY,FI
  18  0  VA 1.0 LY(1,1) LY(2,2) LY(3,3) LY(4,4) LY(5,5) LY(6,7)
                                                              LY(7,7)
  19  0  FR
  20  0  VA 1.0 LX(1,1) LX(2,2) LX(3,3) LX(4,4) LX(5,5) LX(6,6) LX(7,7)
  21  0  VA 1.0 LX(8,8) LX(9,9) LX(10,10) LX(11,11)
  22  0  VA 1.0 BE(6,1) BE(6,2) BE(6,3) BE(6,4)
  23  0  VA 0.5 BE(6,5)
  24  0  FR BE(7,6)
  25  0  FR GA(1,1) GA(1,2)          GA(1,5) GA(1,6) GA(1,7) GA(1,8) GA(1,9)
                                                                  GA(1,10)
  26  0  FR
  27  0  FR GA(2,1) GA(2,2)          GA(2,5) GA(2,6) GA(2,7) GA(2,8) GA(2,9)
                                                                  GA(2,10)
  28  0  FR
  29  0  FR                          GA(3,5) GA(3,6) GA(3,7) GA(3,8) GA(3,9)
                                                                  GA(3,10)
  30  0  FR
  31  0  FR GA(4,1) GA(4,2)          GA(4,5) GA(4,6) GA(4,7) GA(4,8) GA(4,9)
                                                                  GA(4,10)
  32  0  FR                                                       GA(5,10)
  33  0  FR GA(5,1)                  GA(5,5)
  34  0  FR                  GA(7,3) GA(7,5) GA(7,6) GA(7,7) GA(7,9)   GA(7,11)
  35  0  FR PS(1,1) PS(2,2) PS(3,3) PS(4,4) PS(5,5)       PS(7,7)
  36  0  FR PS(2,1)
  37  0  FR PS(3,1) PS(3,2)
  38  0  FR PS(4,1) PS(4,2) PS(4,3)
  39  0  FR                    PS(5,3)
                                                 PS(7,7)
  40  0  ST 1.5
  41  0  ST .24 PH(1,1)
  42  0  ST 130  PH(2,2)
  43  0  ST 9    PH(3,3)
```

```
 44  O  ST  .2  PH(4,4)
 45  O  ST  15. PH(5,5)
 46  O  ST 320. PH(6,6)
 47  O  ST .070 PH(7,7)
 48  O  ST 1.5 PH(8,8)
 49  O  ST .15 PH(9,9)
 50  O  ST .23 PH(10,10)
 51  O  ST 330. PH(11,11)
 52  O  ST .6 TE(6,6)
 53  O  ST 46.3572 PS(1,1)
 54  O  ST 57.4182 PS(2,2)
 55  O  ST 107.8407 PS(3,3)
 56  O  ST 17.2989 PS(4,4)
 57  O  ST 5.4027 PS(5,5)
 58  O  ST 1.0                                        LY(7,7)
 59  O  ST 0.2 GA(1,6) GA(2,6) GA(3,6) GA(4,6)
 60  O  VA 5.1508 TE(1,1)
 61  O  VA 6.3798 TE(2,2)
 62  O  VA 11.9823 TE(3,3)
 63  O  VA 1.9221 TE(4,4)
 64  O  VA 0.6003 TE(5,5)
 65  O  VA 0.3416 TE(6,6)
 66  O  FR        TE(7,7)
 67  O  VA 0.0025 TD(1,1)
 68  O  VA 6.6288 TD(2,2)
 69  O  VA 1.0053 TD(3,3)
 70  O  VA 0.0112 TD(4,4)
 71  O  VA 2.6792 TD(5,5)
 72  O  VA 34.7561 TD(6,6)
 73  O  VA 0.0008000 TD(7,7)
 74  O  VA 0.0194 TD(8,8)
 75  O  VA 0.0019 TD(9,9)
 76  O  VA 0.0123 TD(10,10)
 77  O  VA 37.4817 TD(11,11)
 78  O  OU ML NS AL   IM=75
 79  O  end user

There are 153048 bytes of memory available.
The largest contiguous area has 153048 bytes.
```

L I S R E L VI - VERSION 6.6

BY

KARL G JORESKOG AND DAG SORBOM

Title G C GERMAIN - Thesis Run 1

THE FOLLOWING LISREL CONTROL LINES HAVE BEEN READ :

```
DA NI=18 NO=3519 MA=CM
CM UN=8 FU FO
(18F10.4)
LA
'Housewrk' 'Maintnce' 'Transpor' 'Personal' 'Financal' 'Leisure'
'Balance' 'Sex' 'Age' 'Education' 'Employmt' 'Income' 'Hrs wrkd'
'Alone' 'HH.size' 'Living' 'Together' 'Volunter' /
MO NY=7 NX=11 NE=7 NK=11 LY=FU,FI LX=FU,FI BE=FU,FI GA=FU,FI C
  PH=SY,FR PS=SY,FI TE=SY,FI TD=SY,FI
VA 1.0 LY(1,1) LY(2,2) LY(3,3) LY(4,4) LY(5,5) LY(6,7)
FR                                                LY(7,7)
VA 1.0 LX(1,1) LX(2,2) LX(3,3) LX(4,4) LX(5,5) LX(6,6) LX(7,7)
VA 1.0 LX(8,8) LX(9,9) LX(10,10) LX(11,11)
VA 1.0 BE(6,1) BE(6,2) BE(6,3) BE(6,4)
VA 0.5 BE(6,5)
FR BE(7,6)
FR GA(1,1) GA(1,2)         GA(1,5) GA(1,6) GA(1,7) GA(1,8) GA(1,9)
FR                                                         GA(1,10)
FR GA(2,1) GA(2,2)         GA(2,5) GA(2,6) GA(2,7) GA(2,8) GA(2,9)
FR                                                         GA(2,10)
FR                         GA(3,5) GA(3,6) GA(3,7) GA(3,8) GA(3,9)
FR                                                         GA(3,10)
FR GA(4,1) GA(4,2)         GA(4,5) GA(4,6) GA(4,7) GA(4,8) GA(4,9)
FR                                                         GA(4,10)
FR GA(5,1)                 GA(5,5)                         GA(5,10)
FR                  GA(7,3) GA(7,5) GA(7,6) GA(7,7) GA(7,9)   GA(7,11)
FR PS(1,1) PS(2,2) PS(3,3) PS(4,4) PS(5,5)       PS(7,7)
FR PS(2,1)
FR PS(3,1) PS(3,2)
FR PS(4,1) PS(4,2) PS(4,3)
FR                         PS(5,3)
ST 1.5                                          PS(7,7)
ST .24 PH(1,1)
ST 130. PH(2,2)
ST 9. PH(3,3)
ST .2 PH(4,4)
ST 15. PH(5,5)
ST 320. PH(6,6)
ST .070 PH(7,7)
ST 1.5 PH(8,8)
```

```
ST  15 PH(9,9)
ST  23 PH(10,10)
ST 330. PH(11,11)
ST  6 TE(6,6)
ST 46.3572 PS(1,1)
ST 57.4182 PS(2,2)
ST 107.8407 PS(3,3)
ST 17.2989 PS(4,4)
ST 5.4027 PS(5,5)
ST 1 0                                          LY(7,7)
ST 0 2 GA(1,6) GA(2,6) GA(3,6) GA(4,6)
VA 5.1508 TE(1,1)
VA 6.3798 TE(2,2)
VA 11.9823 TE(3,3)
VA 1.9221 TE(4,4)
VA 0.6003 TE(5,5)
VA 0.3416 TE(6,6)
FR        TE(7,7)
VA 0.0025 TD(1,1)
VA 6.6288 TD(2,2)
VA 1.0053 TD(3,3)
VA 0.0112 TD(4,4)
VA 2.6792 TD(5,5)
VA 34.7561 TD(6,6)
VA 0.0008000 TD(7,7)
VA 0.0194 TD(8,8)
VA 0.0019 TD(9,9)
VA 0.0123 TD(10,10)
VA 37.4817 TD(11,11)
OU ML NS AL   IM=75
```

L I S R E L VI - VERSION 6.6

Title G C GERMAIN - Thesis Run 1

NUMBER OF INPUT VARIABLES	18
NUMBER OF Y - VARIABLES	7
NUMBER OF X - VARIABLES	11
NUMBER OF ETA - VARIABLES	7
NUMBER OF KSI - VARIABLES	11
NUMBER OF OBSERVATIONS	3519

OUTPUT REQUESTED

TECHNICAL OUTPUT	YES
STANDARD ERRORS	YES
T - VALUES	YES
CORRELATIONS OF ESTIMATES	YES
FITTED MOMENTS	YES
TOTAL EFFECTS	YES
VARIANCES AND COVARIANCES	YES
MODIFICATION INDICES	YES
FACTOR SCORES REGRESSIONS	YES
FIRST ORDER DERIVATIVES	YES
STANDARDIZED SOLUTION	YES
PARAMETER PLOTS	NO
AUTOMATIC MODIFICATION	NO

Title G C GERMAIN - Thesis Run 1

COVARIANCE MATRIX TO BE ANALYZED

	Housewrk	Maintnce	Transpor	Personal	Financal	Leisure	Balance	Sex	Age	Educatio
Housewrk	51.508									
Maintnce	11.183	63.798								
Transpor	13.559	18.334	119.823							
Personal	3.485	2.620	4.622	19.221						
Financal	0.647	-0.281	1.626	0.325	6.003					
Leisure	-0.188	0.016	-0.186	0.227	-0.116	1.708				
Balance	-0.007	0.153	-0.060	0.046	-0.080	0.693	1.205			
Sex	0.388	-0.250	0.362	0.096	0.031	-0.000	0.018	0.250		
Age	1.538	0.343	11.400	3.662	0.680	0.144	-0.172	0.051	132.575	
Educatio	0.785	0.739	1.024	0.260	0.347	-0.532	-0.375	0.019	3.547	10.053
Employmt	-0.004	0.267	0.173	0.017	0.056	-0.081	-0.055	-0.053	1.192	0.422
Income	-0.746	2.724	1.071	-0.034	0.561	-0.547	-0.393	-0.758	17.913	5.018
Hrs wrkd	-1.365	12.730	-2.180	-1.615	1.262	-4.213	-2.655	-3.159	15.335	14.854
Alone	-0.096	-0.125	0.003	-0.023	-0.023	0.004	0.019	0.005	-0.165	-0.065
Hh size	-0.652	-0.725	-0.875	-0.291	-0.111	0.012	0.112	-0.006	-2.217	-0.578
Living	-0.303	-0.419	-0.605	-0.110	-0.069	0.065	0.040	-0.012	-2.567	-0.323
Together	-0.003	0.120	-0.209	-0.097	-0.065	0.008	0.023	-0.001	-2.125	0.013
Volunter	3.665	4.429	4.110	2.997	0.302	-0.310	0.178	0.365	14.594	9.064

COVARIANCE MATRIX TO BE ANALYZED

	Employmt	Income	Hrs wrkd	Alone	Hh size	Living	Together	Volunter
Employmt	0.224							
Income	1.315	17.861						
Hrs wrkd	5.977	48.089	347.561					
Alone	-0.013	-0.105	-0.320	0.075				
Hh size	-0.143	-0.954	-2.993	0.191	1.940			
Living	-0.075	-0.716	-1.690	0.020	0.186	0.186		
Together	-0.015	-0.246	-0.104	0.004	0.101	0.034	0.246	
Volunter	-0.375	3.858	-0.458	-0.035	2.322	-0.240	-0.028	374.817

DETERMINANT = 0.326769E+13

Title G C GERMAIN - Thesis Run 1

PARAMETER SPECIFICATIONS

LAMBDA Y

	ETA 1	ETA 2	ETA 3	ETA 4	ETA 5	ETA 6	ETA 7
Housewrk	0	0	0	0	0	0	0
Maintnce	0	0	0	0	0	0	0
Transpor	0	0	0	0	0	0	0
Personal	0	0	0	0	0	0	0
Financal	0	0	0	0	0	0	0
Leisure	0	0	0	0	0	0	0
Balance	0	0	0	0	0	0	1

LAMBDA X

	KSI 1	KSI 2	KSI 3	KSI 4	KSI 5	KSI 6	KSI 7	KSI 8	KSI 9	KSI 10
Sex	0	0	0	0	0	0	0	0	0	0
Age	0	0	0	0	0	0	0	0	0	0
Educatio	0	0	0	0	0	0	0	0	0	0
Employmt	0	0	0	0	0	0	0	0	0	0
Income	0	0	0	0	0	0	0	0	0	0
Hrs wrkd	0	0	0	0	0	0	0	0	0	0
Alone	0	0	0	0	0	0	0	0	0	0
HH size	0	0	0	0	0	0	0	0	0	0
Living	0	0	0	0	0	0	0	0	0	0
Together	0	0	0	0	0	0	0	0	0	0
Volunter	0	0	0	0	0	0	0	0	0	0

LAMBDA X

	KSI 11
Sex	0
Age	0
Educatio	0
Employmt	0
Income	0
Hrs wrkd	0
Alone	0
HH size	0
Living	0
Together	0
Volunter	0

BETA

	ETA 1	ETA 2	ETA 3	ETA 4	ETA 5	ETA 6	ETA 7
ETA 1	0	0	0	0	0	0	0
ETA 2	0	0	0	0	0	0	0
ETA 3	0	0	0	0	0	0	0
ETA 4	0	0	0	0	0	0	0
ETA 5	0	0	0	0	0	0	0
ETA 6	0	0	0	0	0	0	0
ETA 7	0	0	0	0	0	2	0

GAMMA

	KSI 1	KSI 2	KSI 3	KSI 4	KSI 5	KSI 6	KSI 7	KSI 8	KSI 9	KSI 10
ETA 1	3	4	0	0	5	6	7	8	9	10
ETA 2	11	12	0	0	13	14	15	16	17	18
ETA 3	0	0	0	0	19	20	21	22	23	24
ETA 4	25	26	0	0	27	28	29	30	31	32
ETA 5	33	0	0	0	34	0	0	0	0	35
ETA 6	0	0	0	0	0	0	0	0	0	0
ETA 7	0	0	36	0	37	38	39	0	40	0

GAMMA

	KSI 11
ETA 1	0
ETA 2	0
ETA 3	0
ETA 4	0
ETA 5	0
ETA 6	0
ETA 7	41

PHI

	KSI 1	KSI 2	KSI 3	KSI 4	KSI 5	KSI 6	KSI 7	KSI 8	KSI 9	KSI 10
KSI 1	42									
KSI 2	43	44								
KSI 3	45	46	47							
KSI 4	48	49	50	51						
KSI 5	52	53	54	55	56					
KSI 6	57	58	59	60	61	62				
KSI 7	63	64	65	66	67	68	69			
KSI 8	70	71	72	73	74	75	76	77		
KSI 9	78	79	80	81	82	83	84	85	86	
KSI 10	87	88	89	90	91	92	93	94	95	96
KSI 11	97	98	99	100	101	102	103	104	105	106

PHI

	KSI 11
KSI 11	107

PSI

	ETA 1	ETA 2	ETA 3	ETA 4	ETA 5	ETA 6	ETA 7
ETA 1	108						
ETA 2	109	110					
ETA 3	111	112	113				
ETA 4	114	115	116	117			
ETA 5	0	0	118	0	119		
ETA 6	0	0	0	0	0	0	
ETA 7	0	0	0	0	0	0	120

THETA EPS

	Housewrk	Maintnce	Transpor	Personal	Financal	Leisure	Balance
Housewrk	0						
Maintnce	0	0					
Transpor	0	0	0				
Personal	0	0	0	0			
Financal	0	0	0	0	0		
Leisure	0	0	0	0	0	0	
Balance	0	0	0	0	0	0	121

THETA DELTA

	Sex	Age	Educatio	Employmt	Income	Hrs wrkd	Alone	HH size	Living	Together
Sex	0									
Age	0	0								
Educatio	0	0	0							
Employmt	0	0	0	0						
Income	0	0	0	0	0					
Hrs wrkd	0	0	0	0	0	0				
Alone	0	0	0	0	0	0	0			
HH size	0	0	0	0	0	0	0	0		
Living	0	0	0	0	0	0	0	0	0	
Together	0	0	0	0	0	0	0	0	0	0
Volunter	0	0	0	0	0	0	0	0	0	0

THETA DELTA

	Volunter
Volunter	0

Title G C GERMAIN - Thesis Run 1

STARTING VALUES

LAMBDA Y

	ETA 1	ETA 2	ETA 3	ETA 4	ETA 5	ETA 6	ETA 7
Housewrk	1.000	0.000	0.000	0.000	0.000	0.000	0.000
Maintnce	0.000	1.000	0.000	0.000	0.000	0.000	0.000
Transpor	0.000	0.000	1.000	0.000	0.000	0.000	0.000
Personal	0.000	0.000	0.000	1.000	0.000	0.000	0.000
Financal	0.000	0.000	0.000	0.000	1.000	0.000	0.000
Leisure	0.000	0.000	0.000	0.000	0.000	0.000	1.000
Balance	0.000	0.000	0.000	0.000	0.000	0.000	1.000

LAMBDA X

	KSI 1	KSI 2	KSI 3	KSI 4	KSI 5	KSI 6	KSI 7	KSI 8	KSI 9	KSI 10
Sex	1.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Age	0.000	1.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Educatio	0.000	0.000	1.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Employmt	0.000	0.000	0.000	1.000	0.000	0.000	0.000	0.000	0.000	0.000
Income	0.000	0.000	0.000	0.000	1.000	0.000	0.000	0.000	0.000	0.000
Hrs wrkd	0.000	0.000	0.000	0.000	0.000	1.000	0.000	0.000	0.000	0.000
Alone	0.000	0.000	0.000	0.000	0.000	0.000	1.000	0.000	0.000	0.000
Hh size	0.000	0.000	0.000	0.000	0.000	0.000	0.000	1.000	0.000	0.000
Living	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	1.000	0.000
Together	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	1.000
Volunter	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000

LAMBDA X

	KSI 11
Sex	0.000
Age	0.000
Educatio	0.000
Employmt	0.000
Income	0.000
Hrs wrkd	0.000
Alone	0.000
Hh size	0.000
Living	0.000
Together	0.000
Volunter	1.000

BETA

	ETA 1	ETA 2	ETA 3	ETA 4	ETA 5	ETA 6	ETA 7
ETA 1	0.000	0.000	0.000	0.000	0.000	0.000	0.000
ETA 2	0.000	0.000	0.000	0.000	0.000	0.000	0.000
ETA 3	0.000	0.000	0.000	0.000	0.000	0.000	0.000
ETA 4	0.000	0.000	0.000	0.000	0.000	0.000	0.000
ETA 5	0.000	0.000	0.000	0.000	0.000	0.000	0.000
ETA 6	1.000	1.000	1.000	1.000	0.500	0.000	0.000
ETA 7	0.000	0.000	0.000	0.000	0.000	0.000	0.000

GAMMA

	KSI 1	KSI 2	KSI 3	KSI 4	KSI 5	KSI 6	KSI 7	KSI 8	KSI 9	KSI 10
ETA 1	0.000	0.000	0.000	0.000	0.000	0.200	0.000	0.000	0.000	0.000
ETA 2	0.000	0.000	0.000	0.000	0.000	0.200	0.000	0.000	0.000	0.000
ETA 3	0.000	0.000	0.000	0.000	0.000	0.200	0.000	0.000	0.000	0.000
ETA 4	0.000	0.000	0.000	0.000	0.000	0.200	0.000	0.000	0.000	0.000
ETA 5	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
ETA 6	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
ETA 7	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000

GAMMA

	KSI 11
ETA 1	0.000
ETA 2	0.000
ETA 3	0.000
ETA 4	0.000
ETA 5	0.000
ETA 6	0.000
ETA 7	0.000

PHI

	KSI 1	KSI 2	KSI 3	KSI 4	KSI 5	KSI 6	KSI 7	KSI 8	KSI 9	KSI 10
KSI 1	0.240									
KSI 2	0.000	130.000								
KSI 3	0.000	0.000	9.000							
KSI 4	0.000	0.000	0.000	0.200						
KSI 5	0.000	0.000	0.000	0.000	15.000					
KSI 6	0.000	0.000	0.000	0.000	0.000	320.000				
KSI 7	0.000	0.000	0.000	0.000	0.000	0.000	0.070			
KSI 8	0.000	0.000	0.000	0.000	0.000	0.000	0.000	1.500		
KSI 9	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.150	
KSI 10	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.230
KSI 11	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000

PHI

	KSI 11
KSI 11	330.000

PSI

	ETA 1	ETA 2	ETA 3	ETA 4	ETA 5	ETA 6	ETA 7
ETA 1	46.357						
ETA 2	0.000	57.418					
ETA 3	0.000	0.000	107.841				
ETA 4	0.000	0.000	0.000	17.299			
ETA 5	0.000	0.000	0.000	0.000	5.403		
ETA 6	0.000	0.000	0.000	0.000	0.000	0.000	
ETA 7	0.000	0.000	0.000	0.000	0.000	0.000	1.500

W_A_R_N_I_N_G : THE MATRIX PSI IS NOT POSITIVE DEFINITE

THETA EPS

	Housewrk	Maintnce	Transpor	Personal	Financal	Leisure	Balance
Housewrk	5.151						
Maintnce	0.000	6.380					
Transpor	0.000	0.000	11.982				
Personal	0.000	0.000	0.000	1.922			
Financal	0.000	0.000	0.000	0.000	0.600		
Leisure	0.000	0.000	0.000	0.000	0.000	0.342	
Balance	0.000	0.000	0.000	0.000	0.000	0.000	0.000

W_A_R_N_I_N_G : THE MATRIX THETA EPS IS NOT POSITIVE DEFINITE

THETA DELTA

	Sex	Age	Educatio	Employmt	Income	Hrs.wrkd	Alone	Hh.size	Living	Together
Sex	0.003									
Age	0.000	6.629								
Educatio	0.000	0.000	1.005							
Employmt	0.000	0.000	0.000	0.011						
Income	0.000	0.000	0.000	0.000	2.679					
Hrs.wrkd	0.000	0.000	0.000	0.000	0.000	34.756				
Alone	0.000	0.000	0.000	0.000	0.000	0.000	0.001			
Hh.size	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.019		
Living	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.002	
Together	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.012
Volunter	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000

THETA DELTA

	Volunter
Volunter	37.482

SQUARED MULTIPLE CORRELATIONS FOR Y - VARIABLES

Housewrk	Maintnce	Transpor	Personal	Financal	Leisure	Balance
0.900	0.900	0.900	0.900	0.900	0.800	1.000

SQUARED MULTIPLE CORRELATIONS FOR X - VARIABLES

Sex	Age	Educatio	Employmt	Income	Hrs wrkd	Alone	Hh size	Living	Together
0.990	0.950	0.900	0.950	0.850	0.900	0.989	0.990	0.990	0.950

SQUARED MULTIPLE CORRELATIONS FOR X - VARIABLES

Volunter
0.900

TOTAL COEFFICIENT OF DETERMINATION FOR X - VARIABLES IS 1.000

SQUARED MULTIPLE CORRELATIONS FOR STRUCTURAL EQUATIONS

ETA 1	ETA 2	ETA 3	ETA 4	ETA 5	ETA 6	ETA 7
0.216	0.182	0.106	0.425	0.000	1.000	0.000

BEHAVIOR UNDER STEEPEST DESCENT ITERATIONS

ITER	TRY	ABSCISSA	SLOPE	FUNCTION
1	0	0.00000000E+00	-0.64318862E+02	0.31753770E+01
	1	0.10000000E+01		
	2	0.50000000E+00		
	3	0.25000000E+00		
	4	0.12500000E+00		
	5	0.62500000E-01		
	6	0.31250000E-01	0.33034267E+00	0.23288204E+01
2	0	0.00000000E+00	-0.80295830E+02	0.23288204E+01
	1	0.31250000E-01	0.22220132E+03	0.42414911E+01
	2	0.95794219E-02	0.24550583E+02	0.21590129E+01
	3	0.60406246E-02	-0.26094867E+01	0.21188637E+01
3	0	0.00000000E+00	-0.11625858E+02	0.21188637E+01
	1	0.60406246E-02	-0.92014687E+01	0.20558125E+01
	2	0.24487116E-01	0.29206125E+01	0.19794013E+01
	3	0.21337838E-01	-0.23788744E+00	0.19754007E+01
4	0	0.00000000E+00	-0.22456324E+02	0.19754007E+01
	1	0.21337838E-01	0.39177333E+02	0.22055188E+01
	2	0.66906778E-02	-0.13312193E+00	0.19012633E+01
5	0	0.00000000E+00	-0.71301118E+01	0.19012633E+01
	1	0.66906778E-02	-0.40793058E+01	0.18637302E+01
	2	0.15436228E-01	-0.46429455E-03	0.18458111E+01

BEHAVIOR UNDER MINIMIZATION ITERATIONS

ITER	TRY	ABSCISSA	SLOPE	FUNCTION
1	0	0.00000000E+00	-0.44727229E+01	0.18458111E+01
	1	0.10000000E+04	0.24311244E+00	0.14894181E+00
2	0	0.00000000E+00	-0.24774426E+00	0.14894181E+00
	1	0.10000000E+01	0.16701374E+02	0.19053462E+01
	2	0.57452715E+00	0.66346148E+00	0.18763673E+00
	3	0.28908856E+00	0.78740553E-02	0.10997373E+00
3	0	0.00000000E+00	-0.17787754E+00	0.10997373E+00
	1	0.28908856E+00	-0.57833948E-01	0.76712880E-01
	2	0.46934252E+00	0.37127789E-02	0.71946805E-01
4	0	0.00000000E+00	-0.59846299E-01	0.71946805E-01
	1	0.46934252E+00	0.26115451E-01	0.63271082E-01
	2	0.33747245E+00	-0.27620420E-03	0.61596827E-01
5	0	0.00000000E+00	-0.33632413E-01	0.61596827E-01
	1	0.33747245E+00	-0.13462213E-01	0.53691292E-01
	2	0.57757558E+00	0.15927630E-03	0.52103608E-01
6	0	0.00000000E+00	-0.21875711E-01	0.52103608E-01
	1	0.57757558E+00	-0.77392704E-03	0.45396604E-01
7	0	0.00000000E+00	-0.14552266E-01	0.45396604E-01
	1	0.57757558E+00	-0.96170395E-02	0.38393963E-01
	2	0.15727788E+01	0.19311391E-03	0.33549149E-01
8	0	0.00000000E+00	-0.11609414E-01	0.33549149E-01
	1	0.15727788E+01	0.31842593E-02	0.26724196E-01
	2	0.12475193E+01	-0.16660120E-04	0.26211786E-01
9	0	0.00000000E+00	-0.82090791E-02	0.26211786E-01
	1	0.12475193E+01	0.73769786E-02	0.26353359E-01
	2	0.59363254E+00	0.27594741E-05	0.23861794E-01
10	0	0.00000000E+00	-0.54862454E-02	0.23861794E-01
	1	0.59363254E+00	-0.29240399E-02	0.21359861E-01
	2	0.12410724E+01	0.11965509E-04	0.20408513E-01
11	0	0.00000000E+00	-0.40586072E-02	0.20408513E-01
	1	0.12410724E+01	0.16168001E-02	0.18901687E-01
	2	0.88570233E+00	-0.22952439E-05	0.18614888E-01
12	0	0.00000000E+00	-0.23819510E-02	0.18614888E-01
	1	0.88570233E+00	-0.38341456E-03	0.17393146E-01
	2	0.10576429E+01	0.21966142E-06	0.17360221E-01
13	0	0.00000000E+00	-0.11519421E-02	0.17360221E-01
	1	0.10576429E+01	-0.77641347E-04	0.16710270E-01

14	0	0.000000000E+00	-0.660570655E-03	0.167102706E-01
	1	0.105764296E+01	0.161382016E-03	0.164465686E-01
	2	0.849985496E+00	0.227705556E-06	0.164297876E-01
15	0	0.000000000E+00	-0.216119246E-03	0.164297876E-01
	1	0.849985496E+00	0.287278086E-04	0.163500926E-01
	2	0.750257036E+00	-0.412481036E-07	0.163486626E-01
16	0	0.000000000E+00	-0.946515706E-04	0.163486626E-01
	1	0.750257036E+00	-0.455979306E-04	0.162960496E-01
	2	0.144766036E+01	0.233990076E-07	0.162801556E-01
17	0	0.000000000E+00	-0.555050486E-04	0.162801556E-01
	1	0.144766036E+01	0.571585576E-05	0.162441516E-01
	2	0.131250036E+01	0.120109046E-07	0.162437646E-01
18	0	0.000000000E+00	-0.371784016E-04	0.162437646E-01
	1	0.131250036E+01	-0.174430936E-04	0.162079216E-01
	2	0.247255636E+01	-0.201853576E-07	0.161977946E-01
19	0	0.000000000E+00	-0.260764066E-04	0.161977946E-01
	1	0.247255636E+01	0.583676796E-05	0.161727666E-01
	2	0.202033756E+01	-0.209811456E-08	0.161714476E-01
20	0	0.000000000E+00	-0.137031366E-04	0.161714476E-01
	1	0.202033756E+01	0.580740706E-06	0.161581856E-01
21	0	0.000000000E+00	-0.755535236E-05	0.161581856E-01
	1	0.202033756E+01	0.701159146E-05	0.161576406E-01
	2	0.104787686E+01	0.302720306E-08	0.161542296E-01
22	0	0.000000000E+00	-0.398244256E-05	0.161542296E-01
	1	0.104787686E+01	-0.983439926E-07	0.161520916E-01
23	0	0.000000000E+00	-0.128973296E-05	0.161520916E-01
	1	0.104787686E+01	0.205843016E-06	0.161515236E-01
	2	0.903652666E+00	-0.733255456E-11	0.161515096E-01
24	0	0.000000000E+00	-0.622868076E-06	0.161515096E-01
	1	0.903652666E+00	-0.128056986E-06	0.161511696E-01
	2	0.113751776E+01	0.891734056E-11	0.161511546E-01
25	0	0.000000000E+00	-0.243418036E-06	0.161511546E-01
	1	0.113751776E+01	0.434501436E-07	0.161510416E-01
	2	0.965224986E+00	-0.110697096E-11	0.161510376E-01
26	0	0.000000000E+00	-0.101680806E-06	0.161510376E-01
	1	0.965224986E+00	0.110266846E-07	0.161509936E-01
	2	0.870792646E+00	-0.124375076E-12	0.161509936E-01
27	0	0.000000000E+00	-0.359202926E-07	0.161509936E-01
	1	0.870792646E+00	-0.487809906E-08	0.161509756E-01
	2	0.100763266E+01	-0.164018546E-12	0.161509756E-01

28	0	0.00000000E+00	-0.12667276E-07	0.16150975E-01
	1	0.10076326E+01	0.78346711E-09	0.16150969E-01
29	0	0.00000000E+00	-0.41112936E-08	0.16150969E-01
	1	0.10076326E+01	-0.74587538E-09	0.16150966E-01
	2	0.12309536E+01	-0.11051219E-14	0.16150966E-01
30	0	0.00000000E+00	-0.16962337E-08	0.16150966E-01
	1	0.12309536E+01	-0.60581443E-10	0.16150965E-01
31	0	0.00000000E+00	-0.88018474E-09	0.16150965E-01
	1	0.12309536E+01	-0.22847763E-09	0.16150964E-01
	2	0.16625053E+01	-0.87861950E-16	0.16150964E-01
32	0	0.00000000E+00	-0.41925099E-09	0.16150964E-01
	1	0.16625053E+01	-0.77025020E-10	0.16150964E-01
	2	0.20366865E+01	0.18988875E-15	0.16150964E-01
33	0	0.00000000E+00	-0.20135420E-09	0.16150964E-01
	1	0.20366865E+01	-0.90118718E-12	0.16150964E-01
34	0	0.00000000E+00	-0.11624584E-09	0.16150964E-01
	1	0.20366865E+01	0.57520015E-10	0.16150963E-01
	2	0.13625020E+01	0.27767172E-15	0.16150963E-01
35	0	0.00000000E+00	-0.48800071E-10	0.16150963E-01
	1	0.13625020E+01	-0.94171617E-11	0.16150963E-01
	2	0.16883008E+01	0.10889443E-16	0.16150963E-01
36	0	0.00000000E+00	-0.15330734E-10	0.16150963E-01
	1	0.16883008E+01	0.40591833E-11	0.16150963E-01
	2	0.13348633E+01	0.12031871E-17	0.16150963E-01
37	0	0.00000000E+00	-0.73745249E-11	0.16150963E-01
	1	0.13348633E+01	-0.15231477E-11	0.16150963E-01
	2	0.16823361E+01	-0.98561055E-18	0.16150963E-01
38	0	0.00000000E+00	-0.37889479E-11	0.16150963E-01
	1	0.16823361E+01	0.70225298E-12	0.16150963E-01
	2	0.14192827E+01	0.20030333E-18	0.16150963E-01

Title G C GERMAIN - Thesis Run 1

LISREL ESTIMATES (MAXIMUM LIKELIHOOD)

LAMBDA Y

	ETA 1	ETA 2	ETA 3	ETA 4	ETA 5	ETA 6	ETA 7
Housewrk	1.000	0.000	0.000	0.000	0.000	0.000	0.000
Maintnce	0.000	1.000	0.000	0.000	0.000	0.000	0.000
Transpor	0.000	0.000	1.000	0.000	0.000	0.000	0.000
Personal	0.000	0.000	0.000	1.000	0.000	0.000	0.000
Financal	0.000	0.000	0.000	0.000	1.000	0.000	0.000
Leisure	0.000	0.000	0.000	0.000	0.000	0.000	1.000
Balance	0.000	0.000	0.000	0.000	0.000	0.000	0.509

LAMBDA X

	KSI 1	KSI 2	KSI 3	KSI 4	KSI 5	KSI 6	KSI 7	KSI 8	KSI 9	KSI 10
Sex	1.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Age	0.000	1.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Educatio	0.000	0.000	1.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Employmt	0.000	0.000	0.000	1.000	0.000	0.000	0.000	0.000	0.000	0.000
Income	0.000	0.000	0.000	0.000	1.000	0.000	0.000	0.000	0.000	0.000
Hrs wrkd	0.000	0.000	0.000	0.000	0.000	1.000	0.000	0.000	0.000	0.000
Alone	0.000	0.000	0.000	0.000	0.000	0.000	1.000	0.000	0.000	0.000
Hh size	0.000	0.000	0.000	0.000	0.000	0.000	0.000	1.000	0.000	0.000
Living	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	1.000	0.000
Together	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	1.000
Volunter	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000

LAMBDA X

	KSI 11
Sex	0.000
Age	0.000
Educatio	0.000
Employmt	0.000
Income	0.000
Hrs wrkd	0.000
Alone	0.000
Hh size	0.000
Living	0.000
Together	0.000
Volunter	1.000

BETA

	ETA 1	ETA 2	ETA 3	ETA 4	ETA 5	ETA 6	ETA 7
ETA 1	0.000	0.000	0.000	0.000	0.000	0.000	0.000
ETA 2	0.000	0.000	0.000	0.000	0.000	0.000	0.000
ETA 3	0.000	0.000	0.000	0.000	0.000	0.000	0.000
ETA 4	0.000	0.000	0.000	0.000	0.000	0.000	0.000
ETA 5	0.000	0.000	0.000	0.000	0.000	0.000	0.000
ETA 6	1.000	1.000	1.000	1.000	0.500	0.000	0.000
ETA 7	0.000	0.000	0.000	0.000	0.000	0.001	0.000

GAMMA

	KSI 1	KSI 2	KSI 3	KSI 4	KSI 5	KSI 6	KSI 7	KSI 8	KSI 9	KSI 10
ETA 1	1.233	-0.018	0.000	0.000	-0.108	0.013	-0.626	-0.146	-1.915	0.071
ETA 2	-1.088	-0.054	0.000	0.000	-0.006	0.015	-0.657	-0.102	-2.901	0.494
ETA 3	0.000	0.000	0.000	0.000	-0.031	-0.022	1.739	-0.328	-3.384	-0.341
ETA 4	0.228	0.023	0.000	0.000	-0.025	-0.003	0.038	-0.113	-0.251	-0.151
ETA 5	0.257	0.000	0.000	0.000	0.046	0.000	0.000	0.000	0.000	-0.226
ETA 6	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
ETA 7	0.000	0.000	-0.050	0.000	0.053	-0.018	-0.033	0.000	0.327	0.000

GAMMA

	KSI 11
ETA 1	0.000
ETA 2	0.000
ETA 3	0.000
ETA 4	0.000
ETA 5	0.000
ETA 6	0.000
ETA 7	0.000

PHI

	KSI 1	KSI 2	KSI 3	KSI 4	KSI 5	KSI 6	KSI 7	KSI 8	KSI 9	KSI 10
KSI 1	0.247									
KSI 2	0.051	125.947								
KSI 3	0.019	3.537	9.048							
KSI 4	-0.053	1.192	0.422	0.213						
KSI 5	-0.759	17.933	5.018	1.315	15.177					
KSI 6	-3.157	15.154	14.849	5.977	48.103	312.783				
KSI 7	0.005	-0.165	-0.065	-0.013	-0.106	-0.320	0.074			
KSI 8	-0.006	-2.217	-0.576	-0.143	-0.960	-2.971	0.191	1.921		
KSI 9	-0.012	-2.567	-0.323	-0.075	-0.717	-1.690	0.020	0.186	0.184	
KSI 10	-0.001	-2.125	0.012	-0.015	-0.245	-0.109	0.004	0.101	0.034	0.234
KSI 11	0.365	14.586	9.063	-0.375	3.833	-0.429	-0.035	2.321	-0.240	-0.028

PHI

	KSI 11
KSI 11	337.336

PSI

	ETA 1	ETA 2	ETA 3	ETA 4	ETA 5	ETA 6	ETA 7
ETA 1	45.088						
ETA 2	10.665	55.619					
ETA 3	12.076	17.725	105.381				
ETA 4	3.187	2.617	3.965	17.114			
ETA 5	0.000	0.000	1.344	0.000	5.354		
ETA 6	0.000	0.000	0.000	0.000	0.000	0.000	
ETA 7	0.000	0.000	0.000	0.000	0.000	0.000	1.267

W A R N I N G : THE MATRIX PSI IS NOT POSITIVE DEFINITE

THETA EPS

	Housewrk	Maintnce	Transpor	Personal	Financal	Leisure	Balance
Housewrk	5.151						
Maintnce	0.000	6.380					
Transpor	0.000	0.000	11.982				
Personal	0.000	0.000	0.000	1.922			
Financal	0.000	0.000	0.000	0.000	0.600		
Leisure	0.000	0.000	0.000	0.000	0.000	0.342	
Balance	0.000	0.000	0.000	0.000	0.000	0.000	0.851

THETA DELTA

	Sex	Age	Educatio	Employmt	Income	Hrs wrkd	Alone	Hh size	Living	Together
Sex	0.003									
Age	0.000	6.629								
Educatio	0.000	0.000	1.005							
Employmt	0.000	0.000	0.000	0.011						
Income	0.000	0.000	0.000	0.000	2.679					
Hrs wrkd	0.000	0.000	0.000	0.000	0.000	34.756				
Alone	0.000	0.000	0.000	0.000	0.000	0.000	0.001			
Hh size	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.019		
Living	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.002	
Together	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.012
Volunter	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000

THETA DELTA

	Volunter
Volunter	37.482

SQUARED MULTIPLE CORRELATIONS FOR Y - VARIABLES

Housewrk	Maintnce	Transpor	Personal	Financal	Leisure	Balance
0.900	0.900	0.900	0.900	0.900	0.800	0.294

TOTAL COEFFICIENT OF DETERMINATION FOR Y - VARIABLES IS 1.000

SQUARED MULTIPLE CORRELATIONS FOR X - VARIABLES

Sex	Age	Educatio	Employmt	Income	Hrs wrkd	Alone	HH size	Living	Together
0.990	0.950	0.900	0.950	0.850	0.900	0.989	0.990	0.990	0.950

SQUARED MULTIPLE CORRELATIONS FOR X - VARIABLES

Volunter
0.900

TOTAL COEFFICIENT OF DETERMINATION FOR X - VARIABLES IS 1.000

SQUARED MULTIPLE CORRELATIONS FOR STRUCTURAL EQUATIONS

ETA 1	ETA 2	ETA 3	ETA 4	ETA 5	ETA 6	ETA 7
0.026	0.033	0.022	0.010	0.009	1.000	0.072

MEASURES OF GOODNESS OF FIT FOR THE WHOLE MODEL :

CHI-SQUARE WITH 50 DEGREES OF FREEDOM IS 113.64 (PROB LEVEL = 0.000)

GOODNESS OF FIT INDEX IS 0.996

ADJUSTED GOODNESS OF FIT INDEX IS 0.995

ROOT MEAN SQUARE RESIDUAL IS 0.666

Title G C GERMAIN - Thesis Run 1

MODIFICATION INDICES

LAMBDA Y

	ETA 1	ETA 2	ETA 3	ETA 4	ETA 5	ETA 6	ETA 7
Housewrk	0.990	2.015	3.883	5.099	3.522	3.475	1.575
Maintnce	0.981	2.021	2.635	5.102	3.031	3.081	2.611
Transpor	5.745	10.007	1.958	5.090	9.515	0.016	2.189
Personal	0.976	2.029	2.390	5.112	2.207	2.183	4.071
Financal	3.878	0.700	0.538	2.345	0.000	1.016	3.418
Leisure	1.559	0.072	1.166	5.640	1.321	0.335	0.000
Balance	0.425	1.470	0.007	0.449	0.611	0.335	0.000

LAMBDA X

	KSI 1	KSI 2	KSI 3	KSI 4	KSI 5	KSI 6	KSI 7	KSI 8	KSI 9	KSI 10
Sex	0.000	2.550	4.536	0.283	0.000	0.004	2.800	0.616	2.840	0.000
Age	0.000	0.000	1.071	2.807	0.000	0.000	0.000	0.000	0.000	0.000
Educatio	1.096	4.732	0.000	0.000	0.000	0.000	0.000	4.538	0.000	1.455
Employmt	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Income	1.534	1.288	0.083	0.000	0.000	0.004	2.799	5.067	2.839	1.455
Hrs.wrkd	0.400	5.703	0.205	0.000	0.000	0.000	0.000	4.539	0.000	1.454
Alone	8.344	1.770	0.165	4.059	0.000	0.000	0.000	4.537	0.000	1.454
HH.size	7.612	2.958	1.826	0.602	0.000	0.000	0.000	0.000	0.000	0.000
Living	7.889	0.016	0.157	0.060	0.000	0.000	0.000	4.538	0.000	1.455
Together	7.617	1.127	2.926	2.692	0.000	0.004	2.800	0.616	2.840	0.000
Volunter	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000

LAMBDA X

	KSI 11
Sex	0.061
Age	0.233
Educatio	0.000
Employmt	0.000
Income	1.412
Hrs.wrkd	0.558
Alone	0.288
HH.size	6.731
Living	5.956
Together	0.054
Volunter	0.000

BETA

	ETA 1	ETA 2	ETA 3	ETA 4	ETA 5	ETA 6	ETA 7
ETA 1	0.000	0.000	3.475	0.000	3.475	3.475	1.575
ETA 2	0.000	0.000	3.081	0.000	3.081	3.081	2.611
ETA 3	5.320	9.293	0.000	7.501	7.613	0.016	2.189
ETA 4	0.000	0.000	2.183	0.000	2.184	2.183	4.071
ETA 5	3.874	0.698	0.533	2.353	0.000	1.016	3.418
ETA 6	0.982	2.019	1.961	5.096	3.312	0.000	0.000
ETA 7	0.982	2.019	1.961	5.096	3.312	0.000	0.000

GAMMA

	KSI 1	KSI 2	KSI 3	KSI 4	KSI 5	KSI 6	KSI 7	KSI 8	KSI 9	KSI 10
ETA 1	0.000	0.000	1.917	0.621	0.000	0.000	0.000	0.000	0.000	0.000
ETA 2	0.000	0.000	1.416	1.821	0.000	0.000	0.000	0.000	0.000	0.000
ETA 3	7.613	2.960	0.383	2.286	0.000	0.000	0.000	0.000	0.000	0.000
ETA 4	0.000	0.000	0.786	0.512	0.000	0.000	0.000	0.000	0.000	0.000
ETA 5	0.000	2.549	1.146	0.231	0.000	0.004	2.800	0.616	2.840	0.000
ETA 6	0.000	4.732	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
ETA 7	1.096	4.732	0.000	0.056	0.000	0.000	0.000	4.538	0.000	1.456

GAMMA

	KSI 11
ETA 1	1.134
ETA 2	2.300
ETA 3	0.311
ETA 4	3.081
ETA 5	0.000
ETA 6	0.000
ETA 7	0.000

PHI

	KSI 1	KSI 2	KSI 3	KSI 4	KSI 5	KSI 6	KSI 7	KSI 8	KSI 9	KSI 10
KSI 1	0.000									
KSI 2	0.000	0.000								
KSI 3	0.000	0.000	0.000							
KSI 4	0.000	0.000	0.000	0.000						
KSI 5	0.000	0.000	0.000	0.000	0.000					
KSI 6	0.000	0.000	0.000	0.000	0.000	0.000				
KSI 7	0.000	0.000	0.000	0.000	0.000	0.000	0.000			
KSI 8	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000		
KSI 9	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	
KSI 10	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
KSI 11	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000

PHI

	KSI 11
KSI 11	0.000

PSI

	ETA 1	ETA 2	ETA 3	ETA 4	ETA 5	ETA 6	ETA 7
ETA 1	0.000						
ETA 2	0.000	0.000					
ETA 3	0.000	0.000	0.000				
ETA 4	0.000	0.000	0.000	0.000			
ETA 5	3.475	3.081	0.000	2.184	0.000		
ETA 6	0.000	0.000	0.000	0.000	0.000	0.000	
ETA 7	1.211	2.194	1.987	4.581	2.694	0.000	0.000

THETA EPS

	Housewrk	Maintnce	Transpor	Personal	Financal	Leisure	Balance
Housewrk	0.000						
Maintnce	0.000	0.000					
Transpor	0.000	0.000	0.000				
Personal	0.000	0.000	0.000	0.000			
Financal	3.522	3.042	0.000	2.197	0.000		
Leisure	1.525	0.082	1.143	5.256	1.196	3.568	
Balance	0.202	2.460	0.023	0.445	0.380	3.568	0.000

THETA DELTA

	Sex	Age	Educatio	Employmt	Income	Hrs.wrkd	Alone	HH size	Living	Together
Sex	6.184									
Age	5.784	0.000								
Educatio	4.858	3.007	2.032							
Employmt	0.271	2.847	0.053	0.000						
Income	3.910	0.456	1.951	0.007	1.835					
Hrs.wrkd	0.269	12.150	2.692	0.063	4.826	0.000				
Alone	0.242	1.154	2.444	3.080	0.165	5.890	11.622			
HH size	0.275	0.821	3.992	0.753	2.710	5.312	5.562	0.947		
Living	9.397	1.082	0.120	0.047	1.463	6.044	8.759	5.297	0.026	
Together	1.101	2.605	7.061	2.171	4.632	3.917	2.381	1.457	3.886	2.019
Volunter	0.000	0.000	0.000	0.000	0.000	0.000	0.304	6.104	4.560	0.000

THETA DELTA

	Volunter
Volunter	0.000

MAXIMUM MODIFICATION INDEX IS 12.15 FOR ELEMENT (6, 2) OF THETA DELTA

Title G C GERMAIN - Thesis Run 1

STANDARD ERRORS

LAMBDA Y

	ETA 1	ETA 2	ETA 3	ETA 4	ETA 5	ETA 6	ETA 7
Housewrk	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Maintnce	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Transpor	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Personal	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Financal	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Leisure	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Balance	0.000	0.000	0.000	0.000	0.000	0.000	0.016

LAMBDA X

	KSI 1	KSI 2	KSI 3	KSI 4	KSI 5	KSI 6	KSI 7	KSI 8	KSI 9	KSI 10
Sex	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Age	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Educatio	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Employmt	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Income	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Hrs.wrkd	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Alone	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
HH.size	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Living	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Together	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Volunter	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000

LAMBDA X

	KSI 11
Sex	0.000
Age	0.000
Educatio	0.000
Employmt	0.000
Income	0.000
Hrs.wrkd	0.000
Alone	0.000
HH.size	0.000
Living	0.000
Together	0.000
Volunter	0.000

BETA

	ETA 1	ETA 2	ETA 3	ETA 4	ETA 5	ETA 6	ETA 7
ETA 1	0.000	0.000	0.000	0.000	0.000	0.000	0.000
ETA 2	0.000	0.000	0.000	0.000	0.000	0.000	0.000
ETA 3	0.000	0.000	0.000	0.000	0.000	0.000	0.000
ETA 4	0.000	0.000	0.000	0.000	0.000	0.000	0.000
ETA 5	0.000	0.000	0.000	0.000	0.000	0.000	0.000
ETA 6	0.000	0.000	0.000	0.000	0.000	0.000	0.000
ETA 7	0.000	0.000	0.000	0.000	0.000	0.001	0.000

GAMMA

	KSI 1	KSI 2	KSI 3	KSI 4	KSI 5	KSI 6	KSI 7	KSI 8	KSI 9	KSI 10
ETA 1	0.278	0.016	0.000	0.000	0.066	0.012	0.516	0.106	0.372	0.282
ETA 2	0.306	0.017	0.000	0.000	0.073	0.013	0.574	0.118	0.412	0.313
ETA 3	0.000	0.000	0.000	0.000	0.086	0.017	0.787	0.161	0.509	0.401
ETA 4	0.172	0.010	0.000	0.000	0.041	0.007	0.318	0.065	0.229	0.174
ETA 5	0.092	0.000	0.000	0.000	0.012	0.000	0.000	0.000	0.000	0.088
ETA 6	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
ETA 7	0.000	0.000	0.009	0.000	0.011	0.002	0.080	0.000	0.059	0.000

GAMMA

	KSI 11
ETA 1	0.000
ETA 2	0.000
ETA 3	0.000
ETA 4	0.000
ETA 5	0.000
ETA 6	0.000
ETA 7	0.001

PHI

	KSI 1	KSI 2	KSI 3	KSI 4	KSI 5	KSI 6	KSI 7	KSI 8	KSI 9	KSI 10
KSI 1	0.006									
KSI 2	0.097	3.161								
KSI 3	0.027	0.618	0.240							
KSI 4	0.004	0.094	0.026	0.005						
KSI 5	0.038	0.874	0.241	0.040	0.426					
KSI 6	0.166	3.627	1.027	0.180	1.556	8.286				
KSI 7	0.002	0.053	0.015	0.002	0.020	0.086	0.002			
KSI 8	0.012	0.273	0.075	0.011	0.101	0.441	0.007	0.046		
KSI 9	0.004	0.094	0.024	0.004	0.033	0.138	0.002	0.011	0.004	
KSI 10	0.004	0.103	0.027	0.004	0.036	0.156	0.002	0.012	0.004	0.006
KSI 11	0.163	3.766	1.046	0.155	1.381	6.085	0.089	0.456	0.141	0.162

PHI

	KSI 11
KSI 11	8.937

PSI

	ETA 1	ETA 2	ETA 3	ETA 4	ETA 5	ETA 6	ETA 7
ETA 1	1.199						
ETA 2	0.959	1.479					
ETA 3	1.310	1.468	2.799				
ETA 4	0.524	0.581	0.799	0.454			
ETA 5	0.000	0.000	0.433	0.000	0.142		
ETA 6	0.000	0.000	0.000	0.000	0.000	0.000	
ETA 7	0.000	0.000	0.000	0.000	0.000	0.000	0.039

THETA EPS

	Housewrk	Maintnce	Transpor	Personal	Financal	Leisure	Balance
Housewrk	0.000						
Maintnce	0.000	0.000					
Transpor	0.000	0.000	0.000				
Personal	0.000	0.000	0.000	0.000			
Financal	0.000	0.000	0.000	0.000	0.000		
Leisure	0.000	0.000	0.000	0.000	0.000	0.000	
Balance	0.000	0.000	0.000	0.000	0.000	0.000	0.022

THETA DELTA

	Sex	Age	Educatio	Employmt	Income	Hrs wrkd	Alone	Hh.size	Living	Together
Sex	0.000									
Age	0.000	0.000								
Educatio	0.000	0.000	0.000							
Employmt	0.000	0.000	0.000	0.000						
Income	0.000	0.000	0.000	0.000	0.000					
Hrs wrkd	0.000	0.000	0.000	0.000	0.000	0.000				
Alone	0.000	0.000	0.000	0.000	0.000	0.000	0.000			
Hh.size	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000		
Living	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	
Together	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Volunter	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000

THETA DELTA

	Volunter
Volunter	0.000

Title G C GERMAIN - Thesis Run 1

T-VALUES

LAMBDA Y

	ETA 1	ETA 2	ETA 3	ETA 4	ETA 5	ETA 6	ETA 7
Housewrk	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Maintnce	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Transpor	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Personal	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Financal	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Leisure	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Balance	0.000	0.000	0.000	0.000	0.000	0.000	32.318

LAMBDA X

	KSI 1	KSI 2	KSI 3	KSI 4	KSI 5	KSI 6	KSI 7	KSI 8	KSI 9	KSI 10
Sex	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Age	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Educatio	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Employmt	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Income	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Hrs wrkd	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Alone	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
HH size	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Living	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Together	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Volunter	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000

LAMBDA X

	KSI 11
Sex	0.000
Age	0.000
Educatio	0.000
Employmt	0.000
Income	0.000
Hrs wrkd	0.000
Alone	0.000
HH size	0.000
Living	0.000
Together	0.000
Volunter	0.000

BETA

	ETA 1	ETA 2	ETA 3	ETA 4	ETA 5	ETA 6	ETA 7
ETA 1	0.000	0.000	0.000	0.000	0.000	0.000	0.000
ETA 2	0.000	0.000	0.000	0.000	0.000	0.000	0.000
ETA 3	0.000	0.000	0.000	0.000	0.000	0.000	0.000
ETA 4	0.000	0.000	0.000	0.000	0.000	0.000	0.000
ETA 5	0.000	0.000	0.000	0.000	0.000	0.000	0.000
ETA 6	0.000	0.000	0.000	0.000	0.000	0.000	0.000
ETA 7	0.000	0.000	0.000	0.000	0.000	1.045	0.000

GAMMA

	KSI 1	KSI 2	KSI 3	KSI 4	KSI 5	KSI 6	KSI 7	KSI 8	KSI 9	KSI 10
ETA 1	4.440	-1.136	0.000	0.000	-1.629	1.064	-1.212	-1.377	-5.153	0.253
ETA 2	-3.559	-3.132	0.000	0.000	-0.080	1.130	-1.145	-0.863	-7.041	1.579
ETA 3	0.000	0.000	0.000	0.000	-0.360	-1.285	2.210	-2.031	-6.653	-0.852
ETA 4	1.323	2.308	0.000	0.000	-0.608	-0.356	0.120	-1.729	-1.096	-0.871
ETA 5	2.802	0.000	0.000	0.000	3.660	0.000	0.000	0.000	0.000	-2.551
ETA 6	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
ETA 7	0.000	0.000	-5.838	0.000	5.007	-8.985	-0.412	0.000	5.547	0.000

GAMMA

	KSI 11
ETA 1	0.000
ETA 2	0.000
ETA 3	0.000
ETA 4	0.000
ETA 5	0.000
ETA 6	0.000
ETA 7	0.118

PHI

	KSI 1	KSI 2	KSI 3	KSI 4	KSI 5	KSI 6	KSI 7	KSI 8	KSI 9	KSI 10
KSI 1	41.521									
KSI 2	0.522	39.843								
KSI 3	0.717	5.719	37.746							
KSI 4	-12.957	12.669	16.053	39.846						
KSI 5	-20.065	20.517	20.805	32.572	35.649					
KSI 6	-19.036	4.178	14.451	33.251	30.911	37.746				
KSI 7	2.125	-3.112	-4.433	-6.103	-5.401	-3.717	41.492			
KSI 8	-0.487	-8.123	-7.676	-12.533	-9.551	-6.744	26.618	41.521		
KSI 9	-3.275	-27.243	-13.639	-20.473	-21.714	-12.207	9.966	17.546	41.512	
KSI 10	-0.169	-20.690	0.455	-3.835	-6.901	-0.699	1.622	8.552	9.321	39.842
KSI 11	2.234	3.873	8.664	-2.424	2.776	-0.071	-0.394	5.087	-1.706	-0.173

PHI

	KSI 11
KSI 11	37.746

PSI

	ETA 1	ETA 2	ETA 3	ETA 4	ETA 5	ETA 6	ETA 7
ETA 1	37.605						
ETA 2	11.123	37.595					
ETA 3	9.220	12.075	37.650				
ETA 4	6.077	4.503	4.963	37.694			
ETA 5	0.000	0.000	3.106	0.000	37.683		
ETA 6	0.000	0.000	0.000	0.000	0.000	0.000	
ETA 7	0.000	0.000	0.000	0.000	0.000	0.000	32.707

THETA EPS

	Housewrk	Maintnce	Transpor	Personal	Financal	Leisure	Balance
Housewrk	0.000						
Maintnce	0.000	0.000					
Transpor	0.000	0.000	0.000				
Personal	0.000	0.000	0.000	0.000			
Financal	0.000	0.000	0.000	0.000	0.000		
Leisure	0.000	0.000	0.000	0.000	0.000	0.000	
Balance	0.000	0.000	0.000	0.000	0.000	0.000	38.048

THETA DELTA

	Sex	Age	Educatio	Employmt	Income	Hrs wrkd	Alone	Hh size	Living	Together
Sex	0.000									
Age	0.000	0.000								
Educatio	0.000	0.000	0.000							
Employmt	0.000	0.000	0.000	0.000						
Income	0.000	0.000	0.000	0.000	0.000					
Hrs wrkd	0.000	0.000	0.000	0.000	0.000	0.000				
Alone	0.000	0.000	0.000	0.000	0.000	0.000	0.000			
Hh size	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000		
Living	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	
Together	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Volunter	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000

THETA DELTA

	Volunter
Volunter	0.000

Title G C GERMAIN - Thesis Run 1

CORRELATIONS OF ESTIMATES

	LY 7 7	BE 7 6	GA 1 1	GA 1 2	GA 1 5	GA 1 6	GA 1 7	GA 1 8	GA 1 9	GA 1 10
LY 7 7	1.000									
BE 7 6	-0.003	1.000								
GA 1 1	-0.000	-0.005	1.000							
GA 1 2	0.000	0.011	-0.108	1.000						
GA 1 5	0.000	-0.031	0.332	-0.442	1.000					
GA 1 6	-0.000	0.032	0.001	0.366	-0.750	1.000				
GA 1 7	-0.000	-0.000	-0.049	-0.016	0.004	-0.017	1.000			
GA 1 8	0.000	0.000	0.047	-0.070	0.036	0.014	-0.491	1.000		
GA 1 9	0.000	-0.006	0.213	0.362	0.222	-0.011	-0.032	-0.206	1.000	
GA 1 10	-0.000	-0.000	-0.018	0.364	-0.041	0.021	0.052	-0.141	0.085	1.000
GA 2 1	-0.000	-0.005	0.164	-0.018	0.055	0.000	-0.008	0.008	0.035	-0.003
GA 2 2	0.000	0.012	-0.018	0.164	-0.073	0.060	-0.003	-0.011	0.059	0.060
GA 2 5	0.000	-0.034	0.054	-0.072	0.185	-0.141	0.001	0.006	0.045	-0.003
GA 2 6	-0.000	0.035	0.000	0.060	-0.140	0.189	-0.003	0.003	-0.006	0.000
GA 2 7	-0.000	-0.000	-0.008	-0.003	0.001	-0.003	0.191	-0.094	-0.006	0.010
GA 2 8	0.000	0.000	0.008	-0.011	0.006	0.003	-0.094	0.191	-0.039	-0.026
GA 2 9	0.000	-0.007	0.035	0.059	0.045	-0.006	-0.006	-0.039	0.186	0.012
GA 2 10	-0.000	-0.000	-0.003	0.059	-0.003	0.000	0.010	-0.026	0.012	0.188
GA 3 5	0.000	-0.038	0.000	-0.000	0.135	-0.112	0.002	-0.001	0.058	0.021
GA 3 6	-0.000	0.039	-0.000	0.000	-0.103	0.148	-0.002	0.006	-0.026	-0.019
GA 3 7	-0.000	-0.000	-0.000	-0.000	0.002	-0.002	0.157	-0.077	-0.002	0.009
GA 3 8	0.000	0.001	0.000	0.000	-0.001	0.006	-0.077	0.157	-0.030	-0.018
GA 3 9	0.000	-0.013	0.000	-0.000	0.055	-0.027	-0.002	-0.034	0.141	-0.009
GA 3 10	-0.000	-0.006	0.000	-0.000	0.019	-0.019	0.010	-0.020	-0.009	0.146
GA 4 1	-0.000	-0.003	0.091	-0.010	0.030	0.000	-0.004	0.004	0.020	-0.002
GA 4 2	0.000	0.007	-0.010	0.091	-0.041	0.034	-0.001	-0.006	0.033	0.033
GA 4 5	0.000	-0.019	0.031	-0.041	0.100	-0.076	0.001	0.003	0.024	-0.003
GA 4 6	-0.000	0.020	0.000	0.034	-0.076	0.102	-0.002	0.002	-0.003	0.001
GA 4 7	-0.000	-0.000	-0.005	-0.001	0.001	-0.002	0.103	-0.051	-0.003	0.005
GA 4 8	0.000	0.000	0.004	-0.006	0.003	0.002	-0.051	0.103	-0.021	-0.014
GA 4 9	0.000	-0.004	0.020	0.033	0.024	-0.003	-0.003	-0.021	0.101	0.007
GA 4 10	-0.000	-0.000	-0.002	0.034	-0.003	0.001	0.005	-0.014	0.007	0.102
GA 5 1	-0.000	-0.000	-0.008	-0.000	-0.002	-0.000	0.000	-0.000	-0.002	-0.000
GA 5 5	-0.000	-0.001	-0.003	-0.000	-0.001	-0.000	0.000	-0.000	-0.001	-0.000
GA 5 10	-0.000	-0.000	-0.001	-0.000	-0.000	-0.000	0.000	-0.000	-0.000	-0.001
GA 7 3	0.017	-0.013	-0.001	0.001	-0.000	-0.000	-0.000	0.000	0.000	-0.000
GA 7 5	-0.015	0.042	0.000	0.000	-0.004	0.004	-0.000	-0.000	-0.001	0.000
GA 7 6	0.026	-0.018	0.000	-0.000	0.003	-0.004	-0.000	-0.000	0.001	-0.000
GA 7 7	0.001	0.018	-0.000	0.000	-0.001	0.001	-0.003	0.000	0.000	-0.000
GA 7 9	-0.016	0.184	-0.001	0.002	-0.007	0.007	0.000	0.000	-0.004	-0.000
GA 7 11	-0.000	0.007	-0.000	-0.000	-0.000	0.000	0.000	-0.000	-0.000	-0.000
PH 1 1	0.000	-0.000	-0.001	0.000	-0.000	-0.000	0.000	-0.000	-0.000	0.000
PH 2 1	-0.000	0.000	0.001	-0.001	0.000	-0.000	0.000	0.000	-0.000	-0.000
PH 2 2	0.000	-0.000	-0.000	0.001	-0.000	0.000	-0.000	-0.000	0.000	0.000
PH 3 1	-0.000	0.000	-0.000	0.000	-0.000	0.000	0.000	0.000	0.000	-0.000
PH 3 2	0.000	-0.000	0.000	-0.000	0.001	-0.000	-0.000	-0.000	-0.000	0.000
PH 3 3	0.000	-0.000	-0.000	0.000	-0.000	-0.000	-0.000	0.000	0.000	-0.000
PH 4 1	-0.000	0.000	-0.000	0.000	-0.000	-0.000	-0.000	0.000	0.000	-0.000
PH 4 2	0.000	0.000	0.000	-0.000	0.000	0.000	0.000	-0.000	-0.000	0.000
PH 4 3	0.000	0.000	0.000	-0.000	-0.000	0.000	0.000	-0.000	0.000	0.000
PH 4 4	0.000	0.000	0.000	0.000	0.000	-0.000	-0.000	-0.000	-0.000	0.000
PH 5 1	-0.000	-0.000	0.008	0.000	-0.001	0.000	0.000	-0.000	-0.000	0.000
PH 5 2	0.000	0.000	0.000	0.006	0.001	-0.000	-0.000	-0.000	0.000	0.000

PH 5 3	0.000	-0.000	0.002	-0.001	0.003	-0.001	-0.000	-0.000	-0.000	0.000
PH 5 4	0.000	-0.000	0.001	-0.000	0.002	0.002	0.000	-0.000	-0.000	0.000
PH 5 5	0.000	-0.000	0.001	-0.001	0.008	-0.002	0.000	0.000	0.001	-0.000
PH 6 1	-0.000	0.000	-0.003	-0.000	-0.000	-0.001	0.000	-0.000	-0.000	-0.000
PH 6 2	0.000	-0.000	0.000	-0.003	0.000	0.001	0.000	0.000	-0.000	-0.000
PH 6 3	0.000	-0.000	-0.001	0.001	-0.001	0.000	0.000	0.000	0.000	-0.000
PH 6 4	0.000	0.000	-0.000	0.000	-0.001	-0.001	-0.000	0.000	0.000	0.000
PH 6 5	0.000	0.000	-0.000	0.001	-0.003	0.006	-0.000	-0.000	-0.000	0.000
PH 6 6	0.000	-0.000	-0.000	-0.000	0.000	-0.003	0.000	-0.000	-0.000	-0.000
PH 7 1	0.000	-0.000	0.000	-0.000	0.000	0.000	-0.001	0.000	0.000	0.000
PH 7 2	-0.000	0.000	-0.000	0.000	-0.000	0.000	0.001	-0.000	0.000	0.000
PH 7 3	-0.000	0.000	0.000	-0.000	0.000	-0.000	-0.000	-0.000	-0.000	0.000
PH 7 4	-0.000	-0.000	0.000	-0.000	0.000	0.000	0.000	-0.000	-0.000	-0.000
PH 7 5	-0.000	-0.000	0.000	-0.000	0.000	-0.000	0.008	-0.000	0.000	0.000
PH 7 6	-0.000	0.000	0.000	0.000	-0.000	0.000	-0.003	0.000	0.000	-0.000
PH 7 7	0.000	0.000	-0.000	-0.000	-0.000	-0.000	0.000	-0.000	-0.000	0.000
PH 8 1	0.000	0.000	0.000	0.000	-0.000	-0.000	0.000	-0.001	-0.000	0.000
PH 8 2	-0.000	-0.000	-0.000	0.000	0.000	-0.000	-0.000	0.001	-0.000	-0.000
PH 8 3	-0.000	-0.000	0.000	-0.000	0.000	-0.000	-0.000	0.000	-0.000	0.000
PH 8 4	-0.000	0.000	0.000	-0.000	0.000	0.000	0.000	-0.000	-0.000	0.000
PH 8 5	-0.000	0.001	0.000	-0.000	0.000	-0.000	-0.000	0.008	-0.000	-0.000
PH 8 6	-0.000	-0.001	0.000	0.000	0.000	0.000	-0.000	-0.003	-0.000	0.000
PH 8 7	0.000	-0.000	0.000	-0.000	0.000	-0.000	0.000	0.000	-0.000	-0.000
PH 8 8	0.000	0.000	0.000	-0.000	0.000	0.000	-0.000	0.000	-0.000	-0.000
PH 9 1	0.000	-0.000	0.001	-0.000	-0.000	-0.000	0.000	-0.000	-0.001	-0.000
PH 9 2	-0.000	-0.000	-0.000	0.001	0.000	-0.000	0.000	0.000	0.001	-0.000
PH 9 3	-0.000	-0.000	0.000	-0.000	0.000	-0.000	-0.000	-0.000	-0.000	0.000
PH 9 4	-0.000	-0.000	0.000	-0.000	0.000	0.000	0.000	-0.000	-0.000	0.000
PH 9 5	-0.000	-0.000	0.000	-0.000	0.001	-0.000	-0.000	-0.000	0.007	0.000
PH 9 6	-0.000	0.000	-0.000	0.000	-0.000	0.001	-0.000	0.000	-0.003	-0.000
PH 9 7	0.000	-0.000	0.000	0.000	0.000	0.000	0.001	-0.000	0.000	0.000
PH 9 8	0.000	0.000	0.000	0.000	-0.000	0.000	-0.000	0.001	0.000	-0.000
PH 9 9	0.000	-0.000	0.000	0.000	0.000	-0.000	-0.000	-0.000	0.001	0.000
PH 10 1	0.000	0.000	-0.000	-0.000	-0.000	-0.000	0.000	0.000	-0.000	-0.001
PH 10 2	-0.000	-0.000	-0.000	-0.000	0.000	-0.000	0.000	-0.000	-0.000	0.001
PH 10 3	-0.000	-0.000	-0.000	0.000	-0.000	0.000	0.000	0.000	0.000	0.000
PH 10 4	-0.000	-0.000	-0.000	0.000	-0.000	-0.000	-0.000	0.000	0.000	0.000
PH 10 5	-0.000	0.000	-0.000	0.000	-0.000	0.000	0.000	-0.000	0.000	0.009
PH 10 6	-0.000	-0.000	-0.000	-0.000	0.000	-0.000	-0.000	0.000	-0.000	-0.003
PH 10 7	0.000	0.000	0.000	0.000	-0.000	0.000	-0.000	-0.000	0.000	0.000
PH 10 8	0.000	0.000	0.000	0.000	0.000	-0.000	0.000	-0.000	0.000	0.000
PH 10 9	0.000	0.000	0.000	0.000	0.000	-0.000	0.000	-0.000	-0.000	0.001
PH 10 10	0.000	-0.000	0.000	-0.000	0.000	-0.000	-0.000	0.000	-0.000	-0.000
PH 11 1	-0.000	-0.000	-0.000	-0.000	-0.000	0.000	0.000	-0.000	-0.000	-0.000
PH 11 2	0.000	-0.000	0.000	0.000	0.000	-0.000	-0.000	0.000	0.000	0.000
PH 11 3	0.000	0.000	-0.000	-0.000	-0.000	0.000	0.000	-0.000	-0.000	-0.000
PH 11 4	0.000	-0.000	-0.000	0.000	0.000	-0.000	-0.000	0.000	-0.000	-0.000
PH 11 5	0.000	-0.000	0.001	0.000	0.001	-0.000	-0.001	0.001	0.000	0.000
PH 11 6	0.000	0.000	-0.000	-0.000	-0.000	0.000	0.000	-0.000	-0.000	-0.000
PH 11 7	-0.000	0.000	0.000	0.000	0.000	-0.000	-0.000	0.000	0.000	0.000
PH 11 8	-0.000	0.000	0.000	0.000	0.000	-0.000	-0.000	0.000	0.000	0.000
PH 11 9	-0.000	-0.000	0.000	0.000	0.000	-0.000	-0.000	0.000	0.000	0.000
PH 11 10	-0.000	0.000	-0.000	-0.000	-0.000	0.000	0.000	-0.000	-0.000	-0.000
PH 11 11	0.000	-0.000	0.000	0.000	0.000	-0.000	-0.000	0.000	0.000	0.000
PS 1 1	0.000	-0.003	0.005	-0.006	0.021	-0.018	0.000	0.000	0.007	0.000
PS 2 1	0.000	-0.003	0.001	0.003	0.006	-0.006	0.000	-0.000	0.005	0.000
PS 2 2	0.000	-0.002	0.000	0.001	0.001	-0.001	0.000	-0.000	0.001	0.000
PS 3 1	0.000	-0.003	0.002	0.001	0.002	0.001	-0.001	0.000	0.004	0.001
PS 3 2	0.000	-0.002	0.000	0.000	0.001	-0.000	-0.000	0.000	0.001	-0.000
PS 3 3	0.000	-0.001	0.000	-0.000	0.000	0.000	-0.000	0.000	0.000	0.000

PS 4 1	0.000	-0.002	0.002	-0.005	0.006	-0.004	-0.000	0.001	0.000	-0.001
PS 4 2	0.000	-0.001	0.000	-0.000	0.001	-0.001	-0.000	0.000	0.000	-0.000
PS 4 3	0.000	-0.001	0.000	0.000	0.000	0.000	-0.000	0.000	0.000	0.000
PS 4 4	0.000	-0.000	0.000	-0.001	0.001	-0.000	-0.000	0.000	0.000	-0.000
PS 5 3	0.000	0.001	0.001	-0.001	0.001	-0.000	-0.000	0.000	-0.000	-0.000
PS 5 5	0.000	0.000	0.000	0.000	-0.000	0.000	-0.000	0.000	0.000	0.000
PS 7 7	-0.187	-0.004	-0.000	0.000	0.000	-0.000	-0.000	0.000	0.000	0.000
TE 7 7	-0.190	0.001	0.000	-0.000	-0.000	0.000	0.000	-0.000	-0.000	0.000

CORRELATIONS OF ESTIMATES

	GA 2 1	GA 2 2	GA 2 5	GA 2 6	GA 2 7	GA 2 8	GA 2 9	GA 2 10	GA 3 5	GA 3 6
GA 2 1	1.000									
GA 2 2	-0.108	1.000								
GA 2 5	0.329	-0.439	1.000							
GA 2 6	0.001	0.363	-0.750	1.000						
GA 2 7	-0.049	-0.016	0.004	-0.017	1.000					
GA 2 8	0.047	-0.069	0.035	0.014	-0.491	1.000				
GA 2 9	0.212	0.359	0.225	-0.014	-0.031	-0.207	1.000			
GA 2 10	-0.018	0.361	-0.038	0.019	0.052	-0.141	0.083	1.000		
GA 3 5	0.000	-0.000	0.178	-0.148	0.003	-0.002	0.076	0.028	1.000	
GA 3 6	-0.000	0.000	-0.136	0.195	-0.002	0.008	-0.035	-0.025	-0.759	1.000
GA 3 7	-0.000	-0.000	0.002	-0.002	0.208	-0.102	-0.003	0.012	0.014	-0.010
GA 3 8	0.000	0.000	-0.001	0.008	-0.102	0.207	-0.040	-0.024	-0.008	0.040
GA 3 9	0.000	-0.000	0.072	-0.036	-0.003	-0.044	0.187	-0.012	0.406	-0.184
GA 3 10	0.000	-0.000	0.026	-0.025	0.013	-0.026	-0.012	0.194	0.143	-0.130
GA 4 1	0.060	-0.007	0.020	-0.000	-0.003	0.003	0.013	-0.001	0.000	-0.000
GA 4 2	-0.006	0.060	-0.026	0.022	-0.001	-0.004	0.021	0.022	-0.000	0.000
GA 4 5	0.020	-0.027	0.072	-0.055	0.000	0.002	0.018	-0.001	0.072	-0.055
GA 4 6	-0.000	0.022	-0.055	0.074	-0.001	0.001	-0.003	-0.001	-0.060	0.079
GA 4 7	-0.003	-0.001	0.000	-0.001	0.076	-0.037	-0.002	0.004	0.001	-0.001
GA 4 8	0.003	-0.004	0.002	0.001	-0.037	0.076	-0.015	-0.010	-0.001	0.003
GA 4 9	0.013	0.022	0.018	-0.003	-0.002	-0.015	0.073	0.004	0.031	-0.014
GA 4 10	-0.001	0.022	-0.001	-0.001	0.004	-0.010	0.004	0.074	0.011	-0.010
GA 5 1	-0.010	-0.000	-0.003	-0.000	0.001	-0.000	-0.003	-0.000	-0.003	-0.002
GA 5 5	-0.004	-0.000	-0.001	-0.000	0.000	-0.000	-0.001	-0.000	0.026	-0.001
GA 5 10	-0.001	-0.000	-0.000	-0.000	0.000	-0.000	-0.000	-0.000	0.004	-0.000
GA 7 3	-0.000	0.000	0.000	-0.000	-0.000	0.000	0.000	-0.000	0.000	-0.000
GA 7 5	-0.000	0.000	-0.003	0.003	-0.000	-0.000	-0.001	0.000	-0.002	0.002
GA 7 6	0.000	-0.000	0.002	-0.002	-0.000	-0.000	0.000	0.000	0.001	-0.001
GA 7 7	-0.000	0.000	-0.001	0.001	-0.002	0.000	0.000	-0.000	-0.001	0.001
GA 7 9	-0.001	0.002	-0.007	0.007	0.000	0.000	-0.003	-0.000	-0.007	0.007
GA 7 11	-0.000	-0.000	-0.000	0.000	0.000	-0.000	-0.000	-0.000	-0.000	0.000
PH 1 1	0.001	-0.000	0.000	0.000	-0.000	0.000	0.000	-0.000	-0.000	0.000
PH 2 1	0.003	0.000	-0.000	0.000	-0.000	-0.000	0.000	0.000	0.000	-0.000
PH 2 2	-0.000	0.004	-0.000	0.000	-0.000	-0.000	0.000	0.000	0.000	-0.000
PH 3 1	0.000	-0.000	0.000	-0.000	-0.000	-0.000	-0.000	0.000	-0.000	0.000
PH 3 2	0.001	-0.001	0.002	-0.001	-0.000	-0.000	-0.000	0.000	0.000	-0.000
PH 3 3	-0.000	0.000	0.000	-0.000	-0.000	0.000	0.000	-0.000	0.000	-0.000
PH 4 1	0.000	-0.000	0.000	0.000	0.000	-0.000	-0.000	0.000	-0.000	0.000
PH 4 2	0.000	-0.000	0.001	0.001	0.000	-0.000	-0.000	0.000	-0.000	0.000
PH 4 3	0.000	-0.000	-0.000	0.000	0.000	-0.000	0.000	0.000	-0.000	0.000
PH 4 4	0.000	-0.000	0.000	0.000	0.000	-0.000	-0.000	0.000	0.000	0.000
PH 5 1	0.000	-0.000	0.000	-0.000	0.000	-0.000	-0.000	-0.000	-0.000	-0.000
PH 5 2	0.000	-0.000	0.002	-0.001	0.000	0.000	0.000	-0.000	0.001	-0.001
PH 5 3	0.000	0.000	0.000	-0.000	-0.000	-0.000	-0.000	0.000	0.001	-0.000
PH 5 4	0.000	0.000	0.000	0.000	0.000	-0.000	-0.000	0.000	0.000	0.001
PH 5 5	0.000	0.000	0.000	-0.000	0.000	-0.000	0.000	0.000	0.002	-0.000
PH 6 1	-0.004	0.000	-0.000	0.000	0.000	-0.000	-0.000	-0.000	-0.001	-0.000
PH 6 2	0.000	-0.003	-0.000	0.002	0.000	0.000	-0.000	-0.000	0.001	-0.001
PH 6 3	-0.001	0.001	-0.001	0.000	0.000	0.000	0.000	-0.000	0.001	-0.000
PH 6 4	-0.000	0.000	-0.001	-0.001	-0.000	0.000	0.000	0.000	0.001	0.001
PH 6 5	-0.000	0.000	-0.002	0.001	-0.000	-0.000	-0.000	0.000	0.002	0.001
PH 6 6	-0.000	-0.000	0.000	-0.003	0.000	-0.000	-0.000	-0.000	-0.000	0.004
PH 7 1	0.000	-0.000	0.000	0.000	0.001	-0.000	0.000	0.000	0.000	0.000

PH 7 2	-0.000	0.000	-0.000	0.000	0.003	-0.000	0.000	0.000	-0.000	0.000
PH 7 3	0.000	-0.000	0.000	-0.000	-0.000	-0.000	-0.000	0.000	-0.000	0.000
PH 7 4	0.000	-0.000	0.000	0.000	0.000	-0.000	-0.000	-0.000	-0.000	-0.000
PH 7 5	0.000	-0.000	0.000	-0.000	0.000	0.000	0.000	-0.000	-0.000	0.000
PH 7 6	0.000	0.000	-0.000	0.000	-0.003	0.000	0.000	-0.000	0.000	-0.000
PH 7 7	-0.000	-0.000	-0.000	-0.000	0.000	-0.000	-0.000	0.000	-0.000	0.000
PH 8 1	0.000	-0.000	-0.000	-0.000	-0.000	0.001	-0.000	-0.000	-0.000	-0.000
PH 8 2	0.000	0.000	0.000	-0.000	-0.000	0.003	-0.000	-0.000	0.000	-0.000
PH 8 3	0.000	-0.000	0.000	-0.000	-0.000	0.000	-0.000	0.000	0.000	-0.000
PH 8 4	0.000	-0.000	0.000	0.000	0.000	-0.000	-0.000	0.000	0.000	0.000
PH 8 5	-0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	-0.000
PH 8 6	0.000	-0.000	0.000	0.000	-0.000	-0.003	0.000	0.000	0.000	0.000
PH 8 7	0.000	-0.000	0.000	-0.000	0.000	0.000	-0.000	-0.000	0.000	-0.000
PH 8 8	0.000	-0.000	0.000	0.000	-0.000	0.000	-0.000	-0.000	-0.000	0.000
PH 9 1	0.001	0.000	-0.000	-0.000	0.000	-0.000	0.000	-0.000	-0.000	-0.000
PH 9 2	0.000	0.001	0.000	-0.000	0.000	-0.000	0.003	-0.000	0.000	-0.000
PH 9 3	0.000	-0.000	0.001	-0.000	-0.000	-0.000	-0.000	0.000	0.000	-0.000
PH 9 4	0.000	-0.000	0.000	0.000	0.000	-0.000	-0.000	0.000	0.000	0.000
PH 9 5	0.000	-0.000	0.001	-0.000	0.000	0.000	0.000	-0.000	0.001	-0.000
PH 9 6	-0.000	0.000	-0.000	0.001	-0.000	0.000	-0.003	-0.000	-0.000	0.001
PH 9 7	0.000	0.000	0.000	-0.000	0.001	-0.000	0.000	0.000	-0.000	0.000
PH 9 8	0.000	-0.000	-0.000	0.000	-0.000	0.001	0.000	-0.000	0.000	0.000
PH 9 9	0.000	0.000	0.000	-0.000	-0.000	-0.000	0.002	0.000	0.000	-0.000
PH 10 1	-0.002	0.000	-0.000	-0.000	0.000	-0.000	-0.000	0.001	-0.000	-0.000
PH 10 2	-0.000	-0.001	0.000	-0.000	0.000	-0.000	-0.000	0.003	0.000	-0.000
PH 10 3	-0.000	0.000	-0.001	0.000	0.000	0.000	0.000	-0.000	0.000	-0.000
PH 10 4	-0.000	0.000	-0.000	-0.000	-0.000	0.000	0.000	-0.000	0.000	0.000
PH 10 5	-0.000	0.000	-0.001	0.000	0.000	-0.000	-0.000	0.000	0.001	-0.000
PH 10 6	-0.000	-0.000	0.000	-0.001	-0.000	0.000	-0.000	-0.003	0.000	0.000
PH 10 7	0.000	0.000	-0.000	0.000	-0.001	0.000	0.000	0.000	-0.000	0.000
PH 10 8	0.000	0.000	0.000	-0.000	0.000	-0.001	0.000	0.000	-0.000	-0.000
PH 10 9	0.000	0.000	-0.000	-0.000	0.000	-0.000	-0.001	0.001	-0.000	-0.000
PH 10 10	0.000	-0.000	0.000	-0.000	-0.000	0.000	-0.000	-0.002	0.000	-0.000
PH 11 1	0.000	0.000	0.000	-0.000	-0.000	0.000	0.000	0.000	0.000	-0.000
PH 11 2	0.000	0.000	0.000	-0.000	-0.000	0.000	0.000	-0.000	0.000	-0.000
PH 11 3	-0.000	-0.000	-0.000	0.000	0.000	-0.000	-0.000	-0.000	-0.000	0.000
PH 11 4	-0.000	0.000	0.000	-0.000	-0.000	0.000	-0.000	-0.000	0.000	-0.000
PH 11 5	0.000	-0.000	0.000	-0.000	-0.000	0.000	-0.000	-0.000	0.000	-0.000
PH 11 6	-0.000	-0.000	-0.000	0.000	0.000	-0.000	-0.000	-0.000	0.000	-0.000
PH 11 7	0.000	0.000	0.000	-0.000	-0.000	0.000	0.000	0.000	-0.000	0.000
PH 11 8	0.000	0.000	0.000	-0.000	-0.000	0.000	-0.000	0.000	0.000	-0.000
PH 11 9	0.000	0.000	0.000	-0.000	-0.000	0.000	0.000	0.000	0.000	-0.000
PH 11 10	-0.000	-0.000	-0.000	0.000	0.000	-0.000	-0.000	-0.000	0.000	-0.000
PH 11 11	0.000	0.000	0.000	-0.000	-0.000	0.000	0.000	0.000	0.000	-0.000
PS 1 1	0.001	-0.001	0.004	-0.003	0.000	0.000	0.001	0.000	0.003	-0.003
PS 2 1	0.003	-0.004	0.015	-0.013	0.000	0.000	0.006	0.000	0.004	-0.003
PS 2 2	0.001	0.005	0.004	-0.005	-0.000	-0.001	0.006	0.000	0.001	-0.002
PS 3 1	0.000	0.000	0.003	-0.002	-0.000	0.000	0.002	0.000	0.014	-0.012
PS 3 2	0.002	0.001	0.001	0.002	-0.001	0.000	0.003	0.000	0.005	-0.005
PS 3 3	0.000	-0.000	0.000	0.001	-0.000	0.000	0.000	0.000	-0.001	0.004
PS 4 1	0.001	-0.001	0.002	-0.001	-0.000	0.000	0.000	-0.000	0.002	-0.001
PS 4 2	0.002	-0.005	0.005	-0.003	-0.000	0.001	0.000	-0.001	0.001	-0.001
PS 4 3	0.000	0.000	0.001	-0.000	-0.000	0.000	0.000	0.000	0.003	-0.001
PS 4 4	0.000	-0.000	0.000	-0.000	-0.000	0.000	0.000	-0.000	0.000	-0.000
PS 5 3	0.001	-0.001	0.001	-0.000	-0.000	0.000	-0.000	-0.001	-0.012	0.009
PS 5 5	0.000	0.000	0.000	0.000	-0.000	0.000	0.000	0.000	-0.000	0.000
PS 7 7	-0.000	0.000	0.000	-0.000	-0.000	0.000	0.000	0.000	0.000	-0.000
TE 7 7	0.000	-0.000	-0.000	0.000	0.000	-0.000	-0.000	0.000	-0.000	0.000

CORRELATIONS OF ESTIMATES

	GA 3 7	GA 3 8	GA 3 9	GA 3 10	GA 4 1	GA 4 2	GA 4 5	GA 4 6	GA 4 7	GA 4 8
GA 3 7	1.000									
GA 3 8	-0.492	1.000								
GA 3 9	-0.015	-0.214	1.000							
GA 3 10	0.063	-0.126	-0.063	1.000						
GA 4 1	-0.000	0.000	0.000	0.000	1.000					
GA 4 2	-0.000	0.000	-0.000	-0.000	-0.108	1.000				
GA 4 5	0.001	-0.001	0.029	0.010	0.334	-0.444	1.000			
GA 4 6	-0.001	0.003	-0.015	-0.010	0.001	0.369	-0.750	1.000		
GA 4 7	0.084	-0.041	-0.001	0.005	-0.049	-0.016	0.004	-0.017	1.000	
GA 4 8	-0.041	0.084	-0.018	-0.011	0.048	-0.070	0.036	0.013	-0.491	1.000
GA 4 9	-0.001	-0.016	0.075	-0.005	0.215	0.365	0.220	-0.008	-0.032	-0.206
GA 4 10	0.005	-0.010	-0.005	0.078	-0.018	0.367	-0.044	0.024	0.051	-0.142
GA 5 1	0.002	-0.002	-0.014	0.002	-0.004	-0.000	-0.001	-0.000	0.000	-0.000
GA 5 5	0.001	-0.001	-0.006	0.007	-0.002	-0.000	-0.001	-0.000	0.000	-0.000
GA 5 10	0.000	-0.000	-0.001	0.050	-0.000	-0.000	-0.000	-0.000	0.000	-0.000
GA 7 3	-0.000	0.000	0.000	0.000	-0.000	0.000	0.000	-0.000	-0.000	0.000
GA 7 5	-0.000	0.000	-0.001	-0.000	-0.000	0.000	-0.001	0.001	-0.000	-0.000
GA 7 6	0.000	-0.000	0.000	0.000	0.000	-0.000	0.001	-0.001	-0.000	-0.000
GA 7 7	-0.001	0.000	-0.000	-0.000	-0.000	0.000	-0.000	0.000	-0.001	0.000
GA 7 9	0.000	0.000	-0.003	-0.001	-0.001	0.001	-0.004	0.004	0.000	0.000
GA 7 11	0.000	-0.000	-0.000	-0.000	-0.000	0.000	-0.000	0.000	0.000	-0.000
PH 1 1	-0.000	0.000	0.000	-0.000	-0.000	0.000	-0.000	-0.000	0.000	-0.000
PH 2 1	0.000	0.000	-0.000	0.000	-0.003	-0.000	-0.000	-0.000	0.000	-0.000
PH 2 2	0.000	-0.000	0.000	0.000	0.000	-0.003	0.000	-0.000	0.000	0.000
PH 3 1	-0.000	-0.000	0.000	-0.000	-0.000	0.000	-0.000	0.000	0.000	0.000
PH 3 2	-0.000	-0.000	0.000	-0.000	-0.001	0.001	-0.001	0.000	0.000	0.000
PH 3 3	-0.000	0.000	0.000	-0.000	-0.000	0.000	0.000	-0.000	-0.000	0.000
PH 4 1	0.000	-0.000	-0.000	-0.000	-0.000	0.000	-0.000	-0.000	-0.000	0.000
PH 4 2	0.000	-0.000	-0.000	-0.000	-0.000	0.000	-0.001	-0.001	-0.000	0.000
PH 4 3	0.000	-0.000	-0.000	-0.000	0.000	0.000	-0.000	0.000	0.000	-0.000
PH 4 4	0.000	-0.000	0.000	0.000	0.000	-0.000	0.000	0.000	0.000	-0.000
PH 5 1	0.000	-0.000	-0.000	-0.000	0.003	0.000	-0.000	0.000	0.000	-0.000
PH 5 2	0.000	0.000	-0.001	-0.000	-0.000	0.003	-0.002	0.000	-0.000	-0.000
PH 5 3	-0.000	-0.000	-0.000	0.000	0.001	-0.001	0.001	-0.000	-0.000	-0.000
PH 5 4	0.000	-0.000	-0.000	0.000	0.000	-0.000	0.001	0.001	0.000	-0.000
PH 5 5	0.000	-0.000	0.000	0.000	0.000	-0.000	0.003	-0.001	0.000	0.000
PH 6 1	0.000	-0.000	-0.001	-0.000	0.001	-0.000	-0.000	-0.000	0.000	-0.000
PH 6 2	0.000	0.000	-0.001	-0.001	-0.000	0.000	0.000	-0.002	0.000	0.000
PH 6 3	0.000	-0.000	-0.000	0.000	0.000	-0.000	0.000	-0.000	-0.000	-0.000
PH 6 4	0.000	-0.000	-0.000	0.000	0.000	-0.000	0.000	0.000	0.000	-0.000
PH 6 5	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.002	-0.000	0.000
PH 6 6	-0.000	0.000	-0.000	-0.000	0.000	0.000	-0.000	0.001	-0.000	0.000
PH 7 1	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	-0.000	0.000
PH 7 2	-0.000	-0.000	0.000	0.000	0.000	0.000	-0.000	0.000	-0.003	0.000
PH 7 3	-0.000	0.000	0.000	-0.000	0.000	-0.000	-0.000	0.000	-0.000	0.000
PH 7 4	-0.000	0.000	0.000	-0.000	0.000	-0.000	-0.000	-0.000	-0.000	0.000
PH 7 5	0.002	-0.000	-0.000	-0.000	-0.000	-0.000	-0.000	0.000	0.003	-0.000
PH 7 6	0.003	-0.000	0.000	0.000	-0.000	0.000	0.000	-0.000	0.001	-0.000
PH 7 7	-0.001	0.000	0.000	-0.000	-0.000	-0.000	-0.000	0.000	-0.000	0.000
PH 8 1	0.000	0.000	-0.000	-0.000	0.000	0.000	-0.000	-0.000	0.000	-0.000
PH 8 2	0.000	0.000	-0.000	-0.000	-0.000	0.000	0.000	-0.000	0.000	-0.002
PH 8 3	-0.000	-0.000	-0.000	0.000	0.000	-0.000	0.000	-0.000	-0.000	-0.000
PH 8 4	0.000	-0.000	-0.000	0.000	0.000	-0.000	0.000	0.000	0.000	-0.000

| | | |

CORRELATIONS OF ESTIMATES

	GA 4 9	GA 4 10	GA 5 1	GA 5 5	GA 5 10	GA 7 3	GA 7 5	GA 7 6	GA 7 7	GA 7 9
GA 4 9	1.000									
GA 4 10	0.087	1.000								
GA 5 1	-0.001	-0.000	1.000							
GA 5 5	-0.000	-0.000	0.420	1.000						
GA 5 10	-0.000	-0.000	0.069	0.157	1.000					
GA 7 3	0.000	-0.000	0.000	0.000	0.000	1.000				
GA 7 5	-0.000	0.000	-0.000	0.001	-0.000	-0.319	1.000			
GA 7 6	0.000	-0.000	-0.000	0.000	0.000	0.065	-0.737	1.000		
GA 7 7	0.000	-0.000	0.000	0.000	0.000	0.031	0.001	0.013	1.000	
GA 7 9	-0.001	-0.000	-0.001	-0.000	0.000	0.043	0.396	-0.192	-0.134	1.000
GA 7 11	-0.000	-0.000	0.000	0.000	-0.000	-0.168	-0.027	0.060	-0.004	-0.014
PH 1 1	-0.000	0.000	-0.001	-0.000	-0.000	0.000	-0.000	0.000	-0.000	0.000
PH 2 1	-0.000	-0.000	-0.000	-0.000	0.000	-0.000	0.000	-0.000	0.000	-0.000
PH 2 2	-0.000	-0.000	0.000	0.000	0.000	0.000	-0.000	0.000	-0.000	-0.000
PH 3 1	0.000	-0.000	-0.000	-0.000	-0.000	0.003	-0.004	-0.000	0.000	-0.003
PH 3 2	0.000	-0.000	-0.000	0.000	0.000	-0.002	0.005	-0.004	0.000	-0.004
PH 3 3	0.000	-0.000	0.000	0.000	0.000	0.016	-0.000	-0.000	0.000	0.000
PH 4 1	0.000	-0.000	-0.000	-0.000	-0.000	0.000	-0.000	0.000	-0.000	0.000
PH 4 2	0.000	-0.000	0.000	0.000	0.000	-0.000	0.000	-0.000	0.000	0.000
PH 4 3	-0.000	0.000	-0.000	-0.000	-0.000	-0.000	0.003	0.003	-0.000	-0.001
PH 4 4	0.000	0.000	-0.000	-0.000	-0.000	0.000	-0.000	0.000	0.000	0.000
PH 5 1	-0.000	-0.000	-0.010	-0.000	-0.000	-0.005	0.009	0.001	-0.001	0.006
PH 5 2	-0.000	0.000	-0.002	-0.005	0.004	0.004	-0.010	0.008	-0.001	0.008
PH 5 3	-0.000	0.000	-0.002	-0.005	-0.001	-0.023	0.008	-0.001	-0.000	0.001
PH 5 4	-0.000	0.000	-0.001	-0.007	-0.000	0.000	-0.005	-0.006	0.000	0.002
PH 5 5	0.000	-0.000	-0.001	-0.015	-0.000	0.002	-0.024	0.005	-0.000	-0.003
PH 6 1	-0.000	0.000	-0.000	-0.000	-0.000	0.005	-0.009	-0.001	0.001	-0.006
PH 6 2	-0.000	-0.000	-0.000	-0.000	0.000	-0.004	0.010	-0.008	0.001	-0.008
PH 6 3	-0.000	0.000	-0.000	-0.000	-0.000	0.023	-0.002	0.008	0.000	0.000
PH 6 4	-0.000	0.000	-0.000	-0.000	-0.000	-0.000	0.005	0.006	-0.000	-0.002
PH 6 5	0.000	0.000	0.000	-0.006	-0.001	-0.001	0.017	-0.018	-0.000	0.002
PH 6 6	-0.000	-0.000	-0.000	-0.000	0.000	0.000	-0.003	0.026	0.000	-0.001
PH 7 1	0.000	0.000	0.000	0.000	-0.000	0.000	-0.000	-0.000	0.000	-0.000
PH 7 2	0.000	0.000	0.000	0.000	0.000	-0.000	0.000	-0.000	0.000	-0.000
PH 7 3	0.000	-0.000	0.000	0.000	0.000	0.000	-0.000	0.000	0.012	-0.000
PH 7 4	0.000	-0.000	0.000	0.000	0.000	-0.000	0.000	0.000	-0.000	-0.000
PH 7 5	-0.000	0.000	0.000	0.001	-0.000	-0.000	0.000	-0.000	-0.026	0.000
PH 7 6	0.000	0.000	0.000	0.000	0.000	0.000	-0.000	0.000	0.026	-0.000
PH 7 7	0.000	-0.000	-0.000	-0.000	-0.000	0.000	-0.000	0.000	0.000	-0.000
PH 8 1	-0.000	-0.000	0.000	0.000	-0.000	-0.000	0.000	-0.000	0.000	0.000
PH 8 2	0.000	0.000	-0.000	-0.000	-0.000	0.000	-0.000	0.000	-0.000	-0.000
PH 8 3	-0.000	0.000	-0.000	-0.000	-0.000	-0.001	-0.000	-0.000	0.006	0.002
PH 8 4	-0.000	0.000	-0.000	-0.000	-0.000	-0.000	0.000	-0.000	0.000	0.000
PH 8 5	0.000	-0.000	0.001	0.002	-0.001	0.001	0.000	0.000	-0.012	-0.005
PH 8 6	-0.000	-0.000	0.000	0.000	-0.000	-0.001	-0.000	-0.000	0.012	0.005
PH 8 7	-0.000	0.000	0.000	0.000	-0.000	-0.000	-0.000	-0.000	0.000	0.000
PH 8 8	-0.000	-0.000	-0.000	-0.000	-0.000	0.000	-0.000	-0.000	0.000	0.000
PH 9 1	-0.000	-0.000	0.000	0.000	-0.000	-0.000	0.000	0.000	-0.000	0.000
PH 9 2	-0.002	-0.000	-0.000	-0.000	-0.000	0.000	-0.000	0.000	-0.000	0.000
PH 9 3	-0.000	0.000	-0.000	-0.000	-0.000	-0.001	0.000	-0.000	-0.000	0.010
PH 9 4	-0.000	0.000	-0.000	-0.000	-0.000	0.000	-0.000	-0.000	0.000	0.000
PH 9 5	0.003	0.000	0.003	0.006	-0.001	0.000	-0.001	0.000	0.000	-0.021
PH 9 6	0.001	-0.000	-0.000	-0.000	-0.000	0.000	0.000	-0.001	-0.000	0.022

PH 9 7	-0.000	0.000	0.000	0.000	0.000	-0.000	0.000	-0.000	-0.001	0.000
PH 9 8	0.000	-0.000	-0.000	-0.000	0.000	0.000	0.000	0.000	-0.000	-0.000
PH 9 9	0.000	0.000	-0.000	-0.000	-0.000	-0.000	-0.000	0.000	0.000	-0.001
PH 10 1	-0.000	-0.000	0.002	-0.000	-0.001	0.000	0.000	-0.000	0.000	0.000
PH 10 2	-0.000	-0.003	0.000	0.001	-0.001	0.000	-0.000	0.000	-0.000	-0.000
PH 10 3	-0.000	0.000	0.000	0.001	0.000	0.001	-0.002	0.002	0.000	0.001
PH 10 4	-0.000	0.000	0.000	0.002	0.000	0.000	0.000	-0.000	0.000	-0.000
PH 10 5	0.000	0.003	0.000	0.002	-0.012	-0.003	0.004	-0.003	-0.000	-0.002
PH 10 6	0.000	0.001	-0.000	0.001	0.000	0.003	-0.004	0.003	0.000	0.002
PH 10 7	-0.000	-0.000	-0.000	-0.000	0.000	0.000	-0.000	0.000	-0.000	0.000
PH 10 8	-0.000	0.000	-0.000	-0.000	0.000	0.000	-0.000	0.000	-0.000	-0.000
PH 10 9	0.001	0.000	-0.001	-0.001	0.000	-0.000	0.000	-0.000	-0.000	-0.000
PH 10 10	0.000	0.001	0.000	0.000	0.003	0.000	-0.000	0.000	-0.000	-0.000
PH 11 1	-0.000	-0.000	-0.000	-0.000	-0.000	-0.000	0.000	0.000	-0.000	0.000
PH 11 2	-0.000	-0.000	0.000	0.000	-0.000	0.000	-0.000	0.000	-0.000	0.000
PH 11 3	-0.000	-0.000	0.000	0.000	-0.000	-0.000	-0.000	0.000	-0.000	-0.000
PH 11 4	0.000	-0.000	0.000	0.000	0.000	0.000	-0.000	-0.000	0.000	0.000
PH 11 5	0.000	0.000	-0.001	-0.001	-0.000	0.000	-0.000	-0.000	0.000	-0.000
PH 11 6	0.000	0.000	-0.000	-0.000	-0.000	-0.000	-0.000	-0.000	-0.000	-0.000
PH 11 7	0.000	0.000	0.000	0.000	0.000	-0.000	-0.000	0.000	-0.000	0.000
PH 11 8	0.000	0.000	-0.000	-0.000	-0.000	0.000	0.000	0.000	-0.000	-0.000
PH 11 9	-0.000	0.000	-0.000	-0.000	-0.000	0.000	0.000	-0.000	0.000	-0.000
PH 11 10	0.000	0.000	0.000	0.000	0.000	-0.000	0.000	-0.000	-0.000	-0.000
PH 11 11	0.000	0.000	-0.000	-0.000	0.000	0.000	0.000	-0.000	0.000	0.000
PS 1 1	0.001	0.000	-0.000	-0.000	-0.000	0.000	-0.000	0.000	-0.000	-0.000
PS 2 1	0.001	0.000	-0.000	-0.000	-0.000	0.000	-0.000	0.000	-0.000	-0.001
PS 2 2	0.000	-0.000	-0.000	-0.000	-0.000	0.000	-0.000	0.000	-0.000	-0.000
PS 3 1	0.001	0.000	-0.000	-0.000	-0.000	0.000	-0.000	0.000	-0.000	-0.000
PS 3 2	0.000	-0.000	-0.000	-0.000	-0.000	0.000	-0.000	0.000	-0.000	-0.000
PS 3 3	0.000	0.000	-0.000	0.000	0.000	0.000	-0.000	0.000	-0.000	-0.000
PS 4 1	0.005	-0.000	-0.000	-0.000	-0.000	0.000	-0.000	0.000	-0.000	-0.000
PS 4 2	0.004	0.000	-0.000	-0.000	-0.000	0.000	-0.000	0.000	-0.000	-0.000
PS 4 3	0.003	0.001	-0.000	-0.000	-0.000	0.000	-0.000	0.000	-0.000	-0.000
PS 4 4	-0.000	-0.001	-0.000	-0.000	-0.000	0.000	-0.000	0.000	-0.000	-0.000
PS 5 3	-0.000	-0.000	0.000	0.001	0.001	-0.000	0.000	-0.000	0.000	0.000
PS 5 5	0.000	0.000	-0.006	-0.013	0.001	-0.000	0.000	-0.000	0.000	0.000
PS 7 7	0.000	0.000	0.000	0.000	0.000	0.029	-0.074	0.069	0.001	-0.022
TE 7 7	-0.000	0.000	0.000	0.000	0.000	-0.003	0.003	-0.005	-0.000	0.003

CORRELATIONS OF ESTIMATES

	GA 7 11	PH 1 1	PH 2 1	PH 2 2	PH 3 1	PH 3 2	PH 3 3	PH 4 1	PH 4 2	PH 4 3
GA 7 11	1.000									
PH 1 1	0.000	1.000								
PH 2 1	0.000	0.012	1.000							
PH 2 2	-0.000	0.000	0.012	1.000						
PH 3 1	0.000	0.017	0.097	0.001	1.000					
PH 3 2	0.001	0.000	0.013	0.136	0.010	1.000				
PH 3 3	-0.000	0.000	0.002	0.009	0.017	0.136	1.000			
PH 4 1	0.000	-0.309	0.211	0.003	0.272	0.005	0.005	1.000		
PH 4 2	-0.000	-0.003	-0.217	0.302	-0.019	0.294	0.038	-0.038	1.000	
PH 4 3	-0.001	-0.004	-0.018	0.029	-0.212	0.236	0.383	-0.048	0.149	1.000
PH 4 4	0.000	0.050	-0.069	0.048	-0.089	0.087	0.079	-0.309	0.302	0.383
PH 5 1	-0.001	-0.478	0.344	0.004	0.349	0.007	0.006	0.677	-0.071	-0.069
PH 5 2	-0.001	-0.004	-0.334	0.489	-0.030	0.383	0.048	-0.067	0.676	0.131
PH 5 3	0.000	-0.006	-0.028	0.047	-0.332	0.377	0.496	-0.085	0.153	0.687
PH 5 4	0.001	0.095	-0.135	0.095	-0.155	0.154	0.124	-0.413	0.418	0.450
PH 5 5	0.000	0.129	-0.187	0.136	-0.190	0.194	0.140	-0.326	0.335	0.335
PH 6 1	0.001	-0.454	0.064	0.001	0.234	0.003	0.004	0.696	-0.009	-0.044
PH 6 2	0.001	-0.004	-0.337	0.100	-0.031	0.256	0.034	-0.066	0.675	0.116
PH 6 3	-0.000	-0.006	-0.031	0.009	-0.326	0.092	0.345	-0.082	0.081	0.698
PH 6 4	-0.001	0.089	-0.074	0.018	-0.125	0.062	0.083	-0.396	0.177	0.352
PH 6 5	-0.000	0.147	-0.128	0.031	-0.185	0.101	0.114	-0.388	0.247	0.344
PH 6 6	0.000	0.115	-0.034	0.005	-0.120	0.025	0.063	-0.316	0.066	0.232
PH 7 1	0.000	0.051	-0.052	-0.001	-0.074	-0.001	-0.001	-0.109	0.011	0.015
PH 7 2	0.000	0.000	0.035	-0.074	0.003	-0.080	-0.010	0.007	-0.112	-0.025
PH 7 3	-0.000	0.001	0.003	-0.007	0.035	-0.059	-0.106	0.009	-0.024	-0.120
PH 7 4	-0.000	-0.011	0.019	-0.016	0.027	-0.031	-0.030	0.057	-0.073	-0.100
PH 7 5	0.000	-0.018	0.032	-0.027	0.040	-0.047	-0.040	0.059	-0.071	-0.084
PH 7 6	-0.000	-0.017	0.020	-0.005	0.034	-0.018	-0.027	0.058	-0.042	-0.074
PH 7 7	-0.000	0.001	-0.003	0.003	-0.004	0.006	0.006	-0.005	0.008	0.011
PH 8 1	0.000	-0.012	-0.138	-0.002	-0.131	-0.003	-0.002	-0.209	0.028	0.026
PH 8 2	-0.000	-0.000	-0.009	-0.194	-0.002	-0.142	-0.018	-0.004	-0.238	-0.047
PH 8 3	0.001	-0.000	-0.002	-0.019	-0.010	-0.149	-0.183	-0.005	-0.058	-0.241
PH 8 4	-0.000	0.003	0.028	-0.042	0.026	-0.066	-0.051	0.038	-0.177	-0.180
PH 8 5	-0.003	0.004	0.046	-0.071	0.043	-0.098	-0.068	0.070	-0.164	-0.158
PH 8 6	0.003	0.004	0.046	-0.014	0.042	-0.043	-0.046	0.066	-0.106	-0.136
PH 8 7	0.000	-0.000	-0.004	0.009	-0.004	0.015	0.012	-0.006	0.022	0.026
PH 8 8	-0.000	0.000	0.002	0.019	0.002	0.025	0.017	0.002	0.041	0.038
PH 9 1	-0.000	-0.078	-0.517	-0.006	-0.237	-0.008	-0.004	-0.346	0.110	0.047
PH 9 2	-0.000	-0.001	-0.053	-0.650	-0.007	-0.253	-0.029	-0.013	-0.417	-0.075
PH 9 3	0.000	-0.001	-0.011	-0.069	-0.057	-0.523	-0.325	-0.019	-0.172	-0.407
PH 9 4	0.000	0.016	0.097	-0.150	0.035	-0.184	-0.088	0.025	-0.548	-0.307
PH 9 5	0.000	0.026	0.154	-0.251	0.060	-0.260	-0.116	0.087	-0.432	-0.262
PH 9 6	-0.000	0.026	0.168	-0.051	0.065	-0.143	-0.082	0.083	-0.359	-0.238
PH 9 7	0.000	-0.003	-0.015	0.038	-0.004	0.050	0.025	-0.007	0.070	0.049
PH 9 8	-0.000	0.001	0.011	0.097	0.009	0.095	0.042	0.014	0.152	0.091
PH 9 9	0.000	0.003	0.040	0.267	0.018	0.172	0.056	0.028	0.263	0.118
PH 10 1	0.000	-0.004	-0.372	-0.005	0.008	-0.004	0.000	-0.063	0.081	-0.002
PH 10 2	-0.000	-0.000	-0.006	-0.493	-0.000	-0.026	0.001	-0.001	-0.134	-0.004
PH 10 3	-0.000	-0.000	-0.005	-0.051	-0.003	-0.370	0.011	-0.002	-0.108	-0.060
PH 10 4	0.000	0.001	0.083	-0.115	-0.003	-0.102	0.003	0.011	-0.377	-0.010
PH 10 5	0.000	0.001	0.132	-0.193	-0.004	-0.135	0.004	0.021	-0.261	-0.018
PH 10 6	-0.000	0.001	0.126	-0.037	-0.003	-0.092	0.003	0.020	-0.251	-0.011
PH 10 7	-0.000	-0.000	-0.013	0.028	0.000	0.027	-0.001	-0.002	0.041	0.004

PH 10 8	-0.000	0.000	0.003	0.072	0.000	0.047	-0.001	0.001	0.086	0.006
PH 10 9	0.000	0.000	0.022	0.269	0.000	0.083	-0.003	0.004	0.164	0.012
PH 10 10	-0.000	0.000	0.002	0.139	-0.000	-0.004	0.000	0.000	0.033	-0.001
PH 11 1	-0.000	0.053	0.066	0.001	0.148	0.002	0.003	-0.048	-0.015	-0.032
PH 11 2	-0.000	0.000	0.038	0.092	0.005	0.153	0.020	0.008	-0.026	0.027
PH 11 3	0.012	0.001	0.004	0.009	0.039	0.079	0.207	0.010	0.014	0.001
PH 11 4	0.000	-0.012	-0.006	0.020	-0.022	0.050	0.059	0.046	0.055	0.131
PH 11 5	-0.026	-0.019	-0.010	0.034	-0.039	0.078	0.078	0.038	0.027	0.079
PH 11 6	0.026	-0.018	-0.020	0.007	-0.041	0.027	0.052	0.038	0.040	0.086
PH 11 7	0.000	0.002	0.000	-0.005	0.002	-0.013	-0.016	-0.005	-0.005	-0.012
PH 11 8	-0.000	-0.000	-0.006	-0.013	-0.006	-0.029	-0.027	-0.008	-0.008	-0.025
PH 11 9	-0.001	-0.003	-0.023	-0.048	-0.017	-0.091	-0.049	-0.011	-0.003	-0.043
PH 11 10	-0.000	-0.000	-0.014	-0.034	-0.000	-0.054	0.002	-0.002	0.011	-0.010
PH 11 11	-0.000	0.001	0.003	0.004	0.008	0.014	0.022	-0.002	-0.004	-0.008
PS 1 1	-0.000	0.000	-0.000	0.000	-0.000	0.000	0.000	-0.000	0.000	-0.000
PS 2 1	-0.000	-0.000	-0.000	0.000	0.000	0.000	0.000	0.000	0.000	-0.000
PS 2 2	-0.000	0.000	0.000	0.000	-0.000	0.000	0.000	-0.000	-0.000	-0.000
PS 3 1	-0.000	-0.000	0.000	0.000	-0.000	0.000	0.000	-0.000	0.000	-0.000
PS 3 2	-0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	-0.000
PS 3 3	-0.000	0.000	-0.000	0.000	-0.000	0.000	0.000	0.000	0.000	-0.000
PS 4 1	-0.000	0.000	0.000	-0.000	-0.000	-0.000	0.000	-0.000	-0.000	-0.000
PS 4 2	-0.000	-0.000	-0.000	-0.000	0.000	0.000	0.000	0.000	0.000	-0.000
PS 4 3	-0.000	-0.000	0.000	-0.000	-0.000	-0.000	0.000	-0.000	-0.000	-0.000
PS 4 4	-0.000	0.000	0.000	0.000	-0.000	-0.000	0.000	-0.000	-0.000	-0.000
PS 5 3	0.000	0.000	-0.000	0.000	-0.000	0.000	-0.000	-0.000	0.000	0.000
PS 5 5	-0.000	0.000	0.000	-0.000	0.000	0.000	0.000	0.000	-0.000	0.000
PS 7 7	0.001	0.000	-0.000	0.000	0.000	-0.000	0.000	-0.000	-0.000	0.000
TE 7 7	0.000	-0.000	0.000	-0.000	0.000	-0.000	-0.000	0.000	-0.000	-0.000

CORRELATIONS OF ESTIMATES

	PH 4 4	PH 5 1	PH 5 2	PH 5 3	PH 5 4	PH 5 5	PH 6 1	PH 6 2	PH 6 3	PH 6 4
PH 4 4	1.000									
PH 5 1	-0.196	1.000								
PH 5 2	0.191	-0.109	1.000							
PH 5 3	0.245	-0.108	0.206	1.000						
PH 5 4	0.777	-0.362	0.361	0.413	1.000					
PH 5 5	0.432	-0.478	0.489	0.496	0.777	1.000				
PH 6 1	-0.203	0.653	-0.018	-0.074	-0.301	-0.294	1.000			
PH 6 2	0.209	-0.112	0.596	0.142	0.319	0.317	-0.014	1.000		
PH 6 3	0.261	-0.109	0.078	0.640	0.345	0.314	-0.067	0.111	1.000	
PH 6 4	0.793	-0.280	0.140	0.261	0.731	0.470	-0.356	0.220	0.362	1.000
PH 6 5	0.537	-0.448	0.237	0.384	0.769	0.737	-0.458	0.351	0.437	0.757
PH 6 6	0.458	-0.275	0.057	0.203	0.489	0.373	-0.454	0.100	0.345	0.793
PH 7 1	0.033	-0.098	0.017	0.024	0.048	0.046	-0.071	0.017	0.024	0.041
PH 7 2	-0.032	0.012	-0.104	-0.034	-0.049	-0.048	0.002	-0.066	-0.011	-0.017
PH 7 3	-0.041	0.012	-0.027	-0.112	-0.054	-0.048	0.008	-0.019	-0.079	-0.036
PH 7 4	-0.146	0.041	-0.051	-0.070	-0.133	-0.085	0.036	-0.049	-0.066	-0.109
PH 7 5	-0.096	0.064	-0.081	-0.102	-0.136	-0.129	0.042	-0.055	-0.067	-0.086
PH 7 6	-0.099	0.050	-0.036	-0.064	-0.104	-0.079	0.054	-0.057	-0.088	-0.121
PH 7 7	0.011	-0.004	0.006	0.009	0.011	0.008	-0.003	0.005	0.006	0.008
PH 8 1	0.068	-0.151	0.045	0.042	0.095	0.083	-0.106	0.046	0.042	0.082
PH 8 2	-0.066	-0.004	-0.199	-0.059	-0.095	-0.084	-0.001	-0.123	-0.019	-0.033
PH 8 3	-0.085	-0.005	-0.063	-0.197	-0.105	-0.086	-0.003	-0.045	-0.142	-0.071
PH 8 4	-0.299	0.029	-0.116	-0.120	-0.249	-0.148	0.019	-0.116	-0.114	-0.211
PH 8 5	-0.198	0.047	-0.184	-0.177	-0.267	-0.228	0.034	-0.125	-0.117	-0.169
PH 8 6	-0.206	0.047	-0.089	-0.112	-0.201	-0.140	0.029	-0.145	-0.153	-0.242
PH 8 7	0.028	-0.004	0.018	0.020	0.027	0.019	-0.003	0.013	0.015	0.019
PH 8 8	0.047	0.002	0.030	0.028	0.042	0.027	0.001	0.022	0.020	0.029
PH 9 1	0.116	-0.351	0.171	0.075	0.184	0.200	-0.181	0.173	0.075	0.142
PH 9 2	-0.101	-0.020	-0.487	-0.104	-0.165	-0.182	-0.005	-0.219	-0.032	-0.053
PH 9 3	-0.142	-0.023	-0.212	-0.439	-0.202	-0.203	-0.015	-0.146	-0.255	-0.122
PH 9 4	-0.488	0.046	-0.375	-0.234	-0.498	-0.343	0.009	-0.371	-0.199	-0.357
PH 9 5	-0.318	0.075	-0.578	-0.334	-0.487	-0.518	0.037	-0.365	-0.201	-0.280
PH 9 6	-0.345	0.092	-0.315	-0.223	-0.401	-0.332	0.015	-0.519	-0.274	-0.413
PH 9 7	0.053	-0.008	0.063	0.047	0.061	0.050	-0.004	0.043	0.023	0.037
PH 9 8	0.107	0.011	0.124	0.080	0.116	0.087	0.007	0.084	0.050	0.069
PH 9 9	0.135	0.029	0.270	0.123	0.171	0.155	0.016	0.153	0.068	0.091
PH 10 1	0.021	-0.109	0.125	-0.004	0.041	0.060	-0.010	0.126	-0.003	0.020
PH 10 2	-0.019	-0.002	-0.224	-0.007	-0.039	-0.057	-0.000	-0.036	-0.001	-0.006
PH 10 3	-0.026	-0.002	-0.142	-0.107	-0.048	-0.062	-0.001	-0.094	-0.010	-0.016
PH 10 4	-0.091	0.023	-0.253	-0.026	-0.133	-0.109	0.001	-0.253	0.002	-0.046
PH 10 5	-0.060	0.037	-0.387	-0.034	-0.118	-0.165	0.002	-0.230	0.000	-0.039
PH 10 6	-0.062	0.036	-0.221	-0.023	-0.099	-0.101	0.001	-0.372	0.005	-0.060
PH 10 7	0.009	-0.004	0.038	0.008	0.015	0.015	-0.000	0.024	0.000	0.004
PH 10 8	0.020	0.001	0.071	0.013	0.030	0.027	0.000	0.044	0.001	0.008
PH 10 9	0.033	0.007	0.192	0.023	0.057	0.064	0.001	0.083	0.001	0.015
PH 10 10	0.004	0.000	0.058	-0.001	0.009	0.014	0.000	0.006	-0.000	0.001
PH 11 1	0.013	0.031	-0.022	-0.049	0.004	-0.024	-0.013	-0.022	-0.048	0.012
PH 11 2	-0.013	0.013	0.066	0.055	-0.004	0.024	0.003	0.003	0.010	-0.003
PH 11 3	-0.016	0.014	0.027	0.095	-0.002	0.025	0.009	0.016	0.034	-0.009
PH 11 4	-0.058	0.013	0.050	0.103	0.017	0.043	0.024	0.044	0.097	-0.024
PH 11 5	-0.038	0.020	0.078	0.155	-0.008	0.066	0.022	0.039	0.087	-0.021
PH 11 6	-0.039	0.007	0.041	0.095	0.006	0.040	0.036	0.065	0.143	-0.035
PH 11 7	0.006	-0.002	-0.008	-0.016	-0.001	-0.006	-0.002	-0.004	-0.009	0.002

PH 11 8	0.012	-0.006	-0.016	-0.028	-0.003	-0.011	-0.004	-0.007	-0.016	0.004
PH 11 9	0.021	-0.016	-0.047	-0.065	-0.001	-0.026	-0.007	-0.013	-0.030	0.007
PH 11 10	0.004	-0.004	-0.024	-0.016	0.001	-0.008	-0.000	-0.000	-0.002	0.000
PH 11 11	0.002	0.002	0.004	0.009	-0.002	0.002	-0.000	-0.000	-0.000	0.000
PS 1 1	0.000	-0.000	0.000	0.000	0.000	0.000	0.000	-0.000	-0.000	-0.000
PS 2 1	0.000	0.000	0.000	0.000	-0.000	0.000	-0.000	-0.000	-0.000	-0.000
PS 2 2	-0.000	0.000	0.000	0.000	-0.000	0.000	-0.000	-0.000	0.000	0.000
PS 3 1	0.000	-0.000	0.000	0.000	0.000	0.000	-0.000	0.000	0.000	-0.000
PS 3 2	-0.000	-0.000	0.000	0.000	-0.000	0.000	-0.000	0.000	-0.000	-0.000
PS 3 3	0.000	-0.000	-0.000	0.000	0.000	0.000	-0.000	-0.000	0.000	0.000
PS 4 1	0.000	-0.000	-0.000	0.000	0.000	0.000	-0.000	0.000	-0.000	-0.000
PS 4 2	0.000	0.000	0.000	0.000	-0.000	0.000	0.000	0.000	-0.000	-0.000
PS 4 3	0.000	-0.000	0.000	0.000	0.000	0.000	-0.000	0.000	0.000	0.000
PS 4 4	0.000	-0.000	-0.000	0.000	0.000	0.000	-0.000	-0.000	0.000	0.000
PS 5 3	-0.000	0.000	-0.000	-0.000	-0.000	-0.000	0.000	-0.000	-0.000	-0.000
PS 5 5	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
PS 7 7	0.000	-0.000	0.001	-0.000	-0.000	0.000	0.000	-0.001	0.000	0.000
1E 7 7	-0.000	0.000	-0.000	-0.000	-0.000	-0.000	0.000	-0.000	-0.000	-0.000

CORRELATIONS OF ESTIMATES

	PH 6 5	PH 6 6	PH 7 1	PH 7 2	PH 7 3	PH 7 4	PH 7 5	PH 7 6	PH 7 7	PH 8 1
PH 6 5	1.000									
PH 6 6	0.737	1.000								
PH 7 1	0.046	0.030	1.000							
PH 7 2	-0.025	-0.006	0.007	1.000						
PH 7 3	-0.040	-0.022	0.009	0.100	1.000					
PH 7 4	-0.088	-0.060	-0.226	0.223	0.287	1.000				
PH 7 5	-0.101	-0.054	0.361	0.371	0.379	0.660	1.000			
PH 7 6	-0.111	-0.089	-0.340	0.074	0.255	0.678	0.613	1.000		
PH 7 7	0.007	0.004	0.051	-0.074	-0.106	-0.146	-0.129	-0.089	1.000	
PH 8 1	0.082	0.055	0.502	-0.001	0.001	-0.120	-0.186	-0.174	0.025	1.000
PH 8 2	-0.045	-0.011	0.005	0.504	0.055	0.119	0.191	0.041	-0.037	0.010
PH 8 3	-0.071	-0.040	0.007	0.058	0.506	0.155	0.198	0.133	-0.053	0.013
PH 8 4	-0.155	-0.107	-0.109	0.121	0.151	0.510	0.338	0.343	-0.072	-0.217
PH 8 5	-0.180	-0.098	-0.177	0.195	0.197	0.343	0.508	0.312	-0.064	-0.353
PH 8 6	-0.198	-0.161	-0.168	0.044	0.133	0.349	0.314	0.505	-0.044	-0.336
PH 8 7	0.016	0.009	0.009	-0.147	-0.150	-0.238	-0.186	-0.130	0.635	0.028
PH 8 8	0.023	0.013	-0.006	-0.098	-0.092	-0.153	-0.115	-0.081	0.252	-0.012
PH 9 1	0.178	0.101	0.168	-0.017	-0.006	-0.051	-0.075	-0.065	0.009	0.310
PH 9 2	-0.080	-0.019	0.004	0.175	0.026	0.050	0.074	0.020	-0.011	0.009
PH 9 3	-0.148	-0.073	0.006	0.054	0.183	0.073	0.090	0.057	-0.018	0.011
PH 9 4	-0.324	-0.189	-0.030	0.085	0.068	0.195	0.143	0.128	-0.023	-0.054
PH 9 5	-0.358	-0.169	-0.052	0.102	0.079	0.135	0.191	0.115	-0.021	-0.095
PH 9 6	-0.436	-0.291	-0.053	0.043	0.056	0.135	0.126	0.179	-0.015	-0.096
PH 9 7	0.037	0.018	-0.048	-0.518	-0.245	-0.378	-0.402	-0.217	0.238	-0.016
PH 9 8	0.065	0.033	-0.028	-0.270	-0.134	-0.210	-0.214	-0.119	0.116	-0.055
PH 9 9	0.100	0.044	-0.013	-0.124	-0.057	-0.088	-0.094	-0.051	0.029	-0.024
PH 10 1	0.037	0.006	0.027	-0.013	0.001	-0.008	-0.014	-0.010	0.001	0.146
PH 10 2	-0.010	-0.001	0.000	0.044	0.002	0.009	0.015	0.002	-0.002	0.002
PH 10 3	-0.029	-0.004	0.001	0.031	0.027	0.012	0.019	0.008	-0.003	0.002
PH 10 4	-0.074	-0.011	-0.006	0.044	0.007	0.034	0.030	0.020	-0.004	-0.032
PH 10 5	-0.071	-0.010	-0.010	0.044	0.009	0.024	0.038	0.018	-0.004	-0.052
PH 10 6	-0.106	-0.017	-0.009	0.025	0.006	0.022	0.024	0.028	-0.002	-0.049
PH 10 7	0.007	0.001	-0.002	-0.373	0.006	-0.067	-0.119	-0.013	0.039	0.004
PH 10 8	0.013	0.002	-0.002	-0.188	0.000	-0.038	-0.062	-0.009	0.019	-0.004
PH 10 9	0.025	0.003	-0.002	-0.077	-0.005	-0.021	-0.030	-0.008	0.007	-0.009
PH 10 10	0.002	0.000	-0.000	-0.014	0.000	-0.002	-0.005	-0.000	0.001	-0.001
PH 11 1	-0.013	0.001	-0.005	0.002	0.005	0.000	0.004	0.002	-0.000	0.086
PH 11 2	0.002	-0.000	-0.002	-0.010	-0.008	0.001	-0.005	-0.000	0.000	-0.004
PH 11 3	0.010	-0.000	-0.003	-0.005	-0.017	0.001	-0.006	-0.002	0.001	-0.004
PH 11 4	0.026	-0.001	-0.002	-0.008	-0.017	-0.002	-0.009	-0.004	0.001	-0.027
PH 11 5	0.023	-0.001	-0.001	-0.008	-0.016	-0.001	-0.011	-0.004	0.001	-0.037
PH 11 6	0.039	-0.002	-0.000	-0.005	-0.011	-0.002	-0.007	-0.007	0.001	-0.033
PH 11 7	-0.002	0.000	0.037	0.066	0.148	-0.040	0.047	-0.001	-0.009	0.022
PH 11 8	-0.004	0.000	0.019	0.034	0.075	-0.019	0.024	0.000	-0.005	0.037
PH 11 9	-0.008	0.000	0.007	0.015	0.027	-0.005	0.011	0.001	-0.002	0.007
PH 11 10	-0.000	0.000	0.001	0.004	0.004	-0.001	0.002	0.000	-0.000	0.005
PH 11 11	-0.000	0.000	-0.000	-0.001	-0.001	0.000	-0.000	0.000	0.000	0.005
PS 1 1	-0.000	0.000	-0.000	0.000	0.000	0.000	0.000	-0.000	0.000	-0.000
PS 2 1	-0.000	0.000	0.000	0.000	0.000	0.000	0.000	-0.000	0.000	-0.000
PS 2 2	-0.000	0.000	0.000	0.000	-0.000	-0.000	0.000	-0.000	0.000	0.000
PS 3 1	0.000	-0.000	0.000	-0.000	-0.000	-0.000	-0.000	0.000	-0.000	-0.000
PS 3 2	-0.000	-0.000	0.000	-0.000	0.000	0.000	0.000	0.000	-0.000	-0.000
PS 3 3	0.000	0.000	0.000	0.000	-0.000	-0.000	-0.000	-0.000	0.000	-0.000

CORRELATIONS OF ESTIMATES

	PH 8 2	PH 8 3	PH 8 4	PH 8 5	PH 8 6	PH 8 7	PH 8 8	PH 9 1	PH 9 2	PH 9 3
PH 8 2	1.000									
PH 8 3	0.113	1.000								
PH 8 4	0.241	0.300	1.000							
PH 8 5	0.383	0.388	0.668	1.000						
PH 8 6	0.085	0.262	0.682	0.618	1.000					
PH 8 7	-0.108	-0.125	-0.185	-0.153	-0.107	1.000				
PH 8 8	-0.194	-0.183	-0.299	-0.228	-0.161	0.635	1.000			
PH 9 1	0.007	0.006	-0.065	-0.107	-0.102	0.009	-0.004	1.000		
PH 9 2	0.335	0.055	0.103	0.148	0.045	-0.032	-0.054	0.033	1.000	
PH 9 3	0.094	0.329	0.128	0.161	0.102	-0.040	-0.056	0.024	0.189	1.000
PH 9 4	0.167	0.129	0.357	0.267	0.238	-0.058	-0.089	-0.191	0.341	0.336
PH 9 5	0.183	0.143	0.240	0.343	0.207	-0.047	-0.066	-0.314	0.473	0.423
PH 9 6	0.079	0.102	0.241	0.226	0.325	-0.034	-0.049	-0.320	0.156	0.287
PH 9 7	-0.269	-0.139	-0.209	-0.220	-0.123	0.348	0.217	0.026	-0.123	-0.111
PH 9 8	-0.530	-0.262	-0.406	-0.419	-0.233	0.278	0.418	-0.024	-0.253	-0.189
PH 9 9	-0.224	-0.103	-0.157	-0.170	-0.092	0.067	0.096	-0.078	-0.650	-0.325
PH 10 1	0.004	0.002	-0.031	-0.051	-0.049	0.004	-0.002	0.159	0.020	0.001
PH 10 2	0.183	0.012	0.037	0.065	0.011	-0.010	-0.027	0.003	0.293	0.010
PH 10 3	0.062	0.143	0.048	0.069	0.038	-0.013	-0.027	0.003	0.092	0.153
PH 10 4	0.111	0.039	0.156	0.119	0.100	-0.019	-0.044	-0.034	0.152	0.041
PH 10 5	0.113	0.053	0.103	0.162	0.090	-0.016	-0.033	-0.056	0.181	0.055
PH 10 6	0.052	0.035	0.104	0.101	0.146	-0.011	-0.024	-0.053	0.080	0.037
PH 10 7	-0.193	-0.007	-0.047	-0.071	-0.015	0.142	0.103	0.005	-0.064	-0.010
PH 10 8	-0.385	-0.011	-0.093	-0.138	-0.028	0.089	0.204	-0.002	-0.121	-0.018
PH 10 9	-0.186	-0.031	-0.071	-0.091	-0.034	0.029	0.063	-0.011	-0.399	-0.029
PH 10 10	-0.076	0.002	-0.013	-0.024	-0.002	0.005	0.021	-0.001	-0.074	0.002
PH 11 1	0.000	-0.000	-0.018	-0.031	-0.029	0.003	-0.001	-0.031	-0.003	-0.008
PH 11 2	0.076	-0.012	0.024	0.025	0.006	-0.003	-0.017	-0.020	-0.055	-0.077
PH 11 3	-0.000	0.066	0.029	0.026	0.021	-0.005	-0.016	-0.009	-0.016	-0.061
PH 11 4	0.005	-0.008	0.093	0.046	0.058	-0.007	-0.026	-0.007	-0.027	-0.061
PH 11 5	0.021	0.008	0.062	0.077	0.052	-0.006	-0.020	-0.004	-0.032	-0.067
PH 11 6	-0.001	0.005	0.062	0.047	0.086	-0.004	-0.014	0.002	-0.014	-0.037
PH 11 7	0.028	0.067	-0.029	0.015	-0.006	0.074	0.061	0.005	0.011	0.027
PH 11 8	0.053	0.135	-0.058	0.032	-0.011	0.033	0.121	0.012	0.021	0.048
PH 11 9	-0.024	0.025	-0.043	-0.019	-0.018	0.011	0.038	0.039	0.071	0.150
PH 11 10	-0.022	0.022	-0.011	-0.003	-0.001	0.001	0.018	0.006	0.019	0.023
PH 11 11	0.008	0.018	-0.005	0.006	-0.000	-0.001	0.007	-0.002	-0.002	-0.006
PS 1 1	0.000	0.000	0.000	0.000	0.000	0.000	0.000	-0.000	0.000	0.000
PS 2 1	0.000	0.000	-0.000	-0.000	0.000	0.000	0.000	-0.000	0.000	0.000
PS 2 2	0.000	0.000	-0.000	-0.000	0.000	0.000	0.000	0.000	0.000	0.000
PS 3 1	0.000	0.000	0.000	0.000	0.000	-0.000	0.000	-0.000	0.000	0.000
PS 3 2	0.000	0.000	-0.000	-0.000	0.000	0.000	0.000	-0.000	0.000	0.000
PS 3 3	-0.000	0.000	0.000	0.000	0.000	-0.000	0.000	-0.000	-0.000	0.000
PS 4 1	0.000	0.000	0.000	0.000	0.000	0.000	0.000	-0.000	-0.000	0.000
PS 4 2	0.000	0.000	-0.000	-0.000	0.000	0.000	0.000	-0.000	-0.000	0.000
PS 4 3	0.000	0.000	0.000	0.000	0.000	-0.000	0.000	-0.000	0.000	0.000
PS 4 4	-0.000	0.000	0.000	0.000	0.000	-0.000	0.000	-0.000	-0.000	0.000
PS 5 3	-0.000	-0.000	-0.000	0.000	-0.000	-0.000	-0.000	0.000	-0.000	-0.000
PS 5 5	0.000	-0.000	0.000	-0.000	-0.000	-0.000	0.000	-0.000	0.000	0.000
PS 7 7	0.000	-0.000	-0.000	0.000	-0.000	-0.000	-0.000	-0.000	0.000	-0.000
TE 7 7	0.000	0.000	0.000	0.000	0.000	-0.000	-0.000	-0.000	0.000	0.000

CORRELATIONS OF ESTIMATES

	PH 9 4	PH 9 5	PH 9 6	PH 9 7	PH 9 8	PH 9 9	PH 10 1	PH 10 2	PH 10 3	PH 10 4
PH 9 4	1.000									
PH 9 5	0.700	1.000								
PH 9 6	0.693	0.631	1.000							
PH 9 7	-0.154	-0.145	-0.095	1.000						
PH 9 8	-0.296	-0.253	-0.168	0.523	1.000					
PH 9 9	-0.488	-0.518	-0.291	0.238	0.418	1.000				
PH 10 1	-0.030	-0.047	-0.052	0.004	-0.009	-0.012	1.000			
PH 10 2	0.060	0.104	0.016	-0.021	-0.087	-0.109	0.009	1.000		
PH 10 3	0.056	0.081	0.042	-0.018	-0.053	-0.053	0.012	0.088	1.000	
PH 10 4	0.171	0.137	0.109	-0.026	-0.084	-0.083	-0.223	0.227	0.280	1.000
PH 10 5	0.121	0.190	0.099	-0.025	-0.079	-0.088	-0.357	0.384	0.372	0.659
PH 10 6	0.114	0.113	0.158	-0.016	-0.047	-0.047	-0.339	0.070	0.251	0.676
PH 10 7	-0.026	-0.032	-0.012	0.161	0.100	0.038	0.036	-0.059	-0.075	-0.105
PH 10 8	-0.051	-0.057	-0.021	0.086	0.193	0.069	-0.009	-0.179	-0.128	-0.223
PH 10 9	-0.114	-0.165	-0.044	0.053	0.184	0.222	-0.055	-0.533	-0.232	-0.373
PH 10 10	-0.014	-0.025	-0.003	0.006	0.031	0.025	-0.004	-0.493	0.011	-0.091
PH 11 1	0.008	0.007	0.010	-0.001	-0.004	0.002	-0.003	-0.000	-0.000	0.001
PH 11 2	0.014	-0.032	-0.001	0.005	-0.039	0.021	-0.014	-0.025	-0.055	0.015
PH 11 3	0.001	-0.020	-0.007	0.004	-0.016	0.010	0.000	0.000	-0.002	-0.001
PH 11 4	-0.013	-0.034	-0.019	0.005	-0.024	0.015	-0.002	-0.005	-0.010	-0.000
PH 11 5	-0.003	-0.044	-0.017	0.005	-0.028	0.016	-0.003	-0.008	-0.018	0.003
PH 11 6	-0.010	-0.026	-0.028	0.003	-0.014	0.009	0.001	-0.001	-0.002	-0.001
PH 11 7	-0.004	0.010	0.002	-0.029	0.000	-0.007	0.001	0.002	0.004	-0.001
PH 11 8	-0.006	0.018	0.003	-0.016	-0.002	-0.013	0.005	0.009	0.022	-0.005
PH 11 9	-0.028	0.054	0.005	-0.011	0.074	-0.041	0.006	0.011	0.024	-0.005
PH 11 10	-0.004	0.010	0.000	-0.002	0.009	-0.006	0.038	0.062	0.148	-0.041
PH 11 11	0.002	-0.002	0.000	0.000	-0.003	0.001	-0.000	-0.000	-0.001	0.000
PS 1 1	0.000	0.000	-0.000	0.000	0.000	0.000	-0.000	-0.000	-0.000	-0.000
PS 2 1	0.000	0.000	-0.000	0.000	0.000	0.000	0.000	-0.000	-0.000	-0.000
PS 2 2	-0.000	0.000	-0.000	0.000	0.000	0.000	-0.000	-0.000	0.000	0.000
PS 3 1	0.000	0.000	-0.000	-0.000	0.000	0.000	-0.000	0.000	0.000	0.000
PS 3 2	0.000	0.000	0.000	-0.000	0.000	0.000	-0.000	0.000	-0.000	-0.000
PS 3 3	0.000	0.000	0.000	-0.000	0.000	0.000	-0.000	-0.000	0.000	0.000
PS 4 1	0.000	0.000	0.000	0.000	0.000	0.000	-0.000	0.000	0.000	0.000
PS 4 2	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	-0.000	-0.000
PS 4 3	0.000	0.000	0.000	-0.000	0.000	0.000	-0.000	0.000	0.000	0.000
PS 4 4	0.000	0.000	0.000	-0.000	0.000	0.000	-0.000	0.000	0.000	0.000
PS 5 3	-0.000	0.000	0.000	0.000	0.000	-0.000	0.000	-0.000	-0.000	-0.000
PS,5 5	0.000	-0.000	0.000	-0.000	0.000	0.000	-0.000	-0.000	-0.000	-0.000
PS 7 7	-0.000	0.000	-0.000	-0.000	0.000	0.000	-0.000	0.000	0.000	0.000
TE 7 7	0.000	0.000	0.000	-0.000	-0.000	-0.000	-0.000	0.000	0.000	0.000

CORRELATIONS OF ESTIMATES

	PH 10 5	PH 10 6	PH 10 7	PH 10 8	PH 10 9	PH 10 10	PH 11 1	PH 11 2	PH 11 3	PH 11 4
PH 10 5	1.000									
PH 10 6	0.609	1.000								
PH 10 7	-0.094	-0.063	1.000							
PH 10 8	-0.177	-0.115	0.501	1.000						
PH 10 9	-0.404	-0.210	0.173	0.325	1.000					
PH 10 10	-0.165	-0.017	0.039	0.204	0.222	1.000				
PH 11 1	0.001	0.001	-0.000	-0.000	0.000	0.000	1.000			
PH 11 2	-0.018	0.000	0.003	-0.031	0.012	0.002	0.011	1.000		
PH 11 3	-0.001	-0.001	0.000	0.001	0.000	-0.000	0.017	0.105	1.000	
PH 11 4	-0.005	-0.002	0.001	-0.005	0.003	0.000	-0.225	0.215	0.272	1.000
PH 11 5	-0.008	-0.002	0.001	-0.009	0.004	0.000	-0.357	0.370	0.377	0.654
PH 11 6	-0.002	-0.003	0.000	-0.001	0.001	0.000	-0.339	0.070	0.248	0.676
PH 11 7	0.002	0.000	-0.003	0.001	-0.001	-0.000	0.036	-0.053	-0.075	-0.103
PH 11 8	0.007	0.000	-0.002	0.009	-0.005	-0.001	-0.005	-0.132	-0.116	-0.219
PH 11 9	0.009	0.000	-0.002	0.013	-0.007	-0.001	-0.056	-0.518	-0.238	-0.366
PH 11 10	0.047	-0.001	-0.007	0.085	-0.029	-0.004	-0.003	-0.372	0.007	-0.065
PH 11 11	-0.000	0.000	0.000	-0.000	0.000	0.000	0.053	0.092	0.207	-0.058
PS 1 1	-0.000	0.000	-0.000	-0.000	-0.000	0.000	-0.000	0.000	-0.000	0.000
PS 2 1	-0.000	0.000	-0.000	-0.000	-0.000	0.000	0.000	0.000	-0.000	0.000
PS 2 2	-0.000	0.000	-0.000	-0.000	-0.000	0.000	0.000	0.000	-0.000	0.000
PS 3 1	0.000	-0.000	0.000	0.000	0.000	-0.000	-0.000	0.000	-0.000	0.000
PS 3 2	-0.000	-0.000	0.000	-0.000	-0.000	-0.000	0.000	0.000	-0.000	0.000
PS 3 3	0.000	0.000	-0.000	0.000	0.000	0.000	0.000	0.000	-0.000	0.000
PS 4 1	0.000	-0.000	0.000	0.000	0.000	-0.000	-0.000	-0.000	-0.000	0.000
PS 4 2	-0.000	-0.000	0.000	-0.000	0.000	-0.000	0.000	-0.000	-0.000	0.000
PS 4 3	0.000	0.000	-0.000	0.000	0.000	0.000	-0.000	-0.000	-0.000	0.000
PS 4 4	0.000	0.000	-0.000	0.000	0.000	0.000	-0.000	-0.000	-0.000	0.000
PS 5 3	-0.000	0.000	0.000	0.000	-0.000	0.000	-0.000	0.000	0.000	-0.000
PS 5 5	-0.000	-0.000	0.000	0.000	0.000	0.000	0.000	-0.000	0.000	-0.000
PS 7 7	-0.000	0.000	0.000	0.000	-0.000	0.000	-0.000	0.000	-0.000	-0.000
TE 7 7	0.000	0.000	-0.000	-0.000	-0.000	-0.000	0.000	-0.000	-0.000	-0.000

CORRELATIONS OF ESTIMATES

	PH 11 5	PH 11 6	PH 11 7	PH 11 8	PH 11 9	PH 11 10	PH 11 11	PS 1 1	PS 2 1	PS 2 2
PH 11 5	1.000									
PH 11 6	0.610	1.000								
PH 11 7	-0.092	-0.063	1.000							
PH 11 8	-0.158	-0.114	0.500	1.000						
PH 11 9	-0.394	-0.210	0.171	0.306	1.000					
PH 11 10	-0.117	-0.012	0.027	0.145	0.159	1.000				
PH 11 11	0.066	-0.002	-0.009	0.121	-0.041	-0.004	1.000			
PS 1 1	0.000	-0.000	0.000	0.000	0.000	0.000	0.000	1.000		
PS 2 1	0.000	-0.000	0.000	0.000	0.000	-0.000	0.000	0.266	1.000	
PS 2 2	0.000	-0.000	0.000	0.000	0.000	-0.000	0.000	0.037	0.266	1.000
PS 3 1	0.000	0.000	-0.000	0.000	0.000	0.000	0.000	0.220	0.231	0.056
PS 3 2	0.000	0.000	-0.000	0.000	0.000	-0.000	0.000	0.042	0.190	0.288
PS 3 3	0.000	-0.000	0.000	-0.000	-0.000	-0.000	0.000	0.025	0.045	0.043
PS 4 1	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.145	0.093	0.020
PS 4 2	0.000	-0.000	0.000	0.000	0.000	0.000	0.000	0.028	0.115	0.107
PS 4 3	0.000	0.000	-0.000	0.000	0.000	0.000	0.000	0.023	0.033	0.022
PS 4 4	0.000	0.000	-0.000	0.000	0.000	0.000	0.000	0.011	0.011	0.006
PS 5 3	-0.000	-0.000	0.000	-0.000	-0.000	-0.000	-0.000	0.000	0.000	-0.000
PS 5 5	0.000	0.000	-0.000	0.000	0.000	-0.000	-0.000	-0.000	-0.000	-0.000
PS 7 7	0.000	-0.000	-0.000	0.000	0.000	-0.000	-0.000	0.000	0.000	0.000
TE 7 7	-0.000	-0.000	0.000	0.000	0.000	0.000	-0.000	-0.000	-0.000	-0.000

CORRELATIONS OF ESTIMATES

	PS 3 1	PS 3 2	PS 3 3	PS 4 1	PS 4 2	PS 4 3	PS 4 4	PS 5 3	PS 5 5	PS 7 7
PS 3 1	1.000									
PS 3 2	0.217	1.000								
PS 3 3	0.219	0.287	1.000							
PS 4 1	0.099	0.027	0.019	1.000						
PS 4 2	0.037	0.098	0.025	0.198	1.000					
PS 4 3	0.115	0.091	0.118	0.165	0.213	1.000				
PS 4 4	0.012	0.009	0.007	0.145	0.107	0.119	1.000			
PS 5 3	-0.001	-0.000	0.069	0.000	0.000	-0.000	0.000	1.000		
PS 5 5	0.000	0.000	0.003	-0.000	-0.000	0.000	-0.000	0.074	1.000	
PS 7 7	0.000	0.000	0.000	0.000	0.000	0.000	0.000	-0.000	-0.000	1.000
TE 7 7	-0.000	-0.000	-0.000	-0.000	-0.000	-0.000	-0.000	-0.000	-0.000	0.016

CORRELATIONS OF ESTIMATES

	TE 7 7
TE 7 7	1.000

Title G C GERMAIN - Thesis Run 1

FITTED MOMENTS AND RESIDUALS

FITTED MOMENTS

	Housewrk	Maintnce	Transpor	Personal	Financal	Leisure	Balance	Sex	Age	Educatio
Housewrk	51.461									
Maintnce	11.187	63.909								
Transpor	13.203	18.766	119.779							
Personal	3.467	2.618	4.459	19.214						
Financal	0.062	0.020	1.479	0.047	6.001					
Leisure	-0.030	-0.153	0.053	0.029	-0.016	1.708				
Balance	-0.015	-0.078	0.027	0.015	-0.008	0.695	1.205			
Sex	0.366	-0.284	0.144	0.089	0.029	0.012	0.006	0.250		
Age	1.268	-0.016	8.964	3.572	1.309	-0.315	-0.160	0.051	132.575	
Educatio	0.354	1.027	0.683	0.062	0.231	-0.555	-0.283	0.019	3.537	10.053
Employmt	0.020	0.309	0.111	0.003	0.050	-0.082	-0.042	-0.053	1.192	0.422
Income	-0.714	2.618	1.114	0.048	0.552	-0.539	-0.274	-0.759	17.933	5.018
Hrs.wrkd	-1.475	12.419	-2.187	-1.635	1.406	-4.343	-2.211	-3.157	15.154	14.849
Alone	-0.096	-0.125	0.007	-0.024	-0.004	0.007	0.004	0.005	-0.165	-0.065
Hh1.size	-0.652	-0.724	-0.866	-0.291	-0.068	0.083	0.042	-0.006	-2.217	-0.576
Living	-0.303	-0.419	-0.601	-0.110	-0.043	0.066	0.034	-0.012	-2.567	-0.323
Together	-0.003	0.119	-0.211	-0.097	-0.064	-0.001	-0.000	-0.001	-2.125	0.012
Volunter	-0.089	-0.745	-0.109	0.119	0.274	-0.274	-0.140	0.365	14.586	9.063

FITTED MOMENTS

	Employmt	Income	Hrs.wrkd	Alone	Hh1.size	Living	Together	Volunter
Employmt	0.224							
Income	1.315	17.857						
Hrs.wrkd	5.977	48.103	347.539					
Alone	-0.013	-0.106	-0.320	0.075				
Hh1.size	-0.143	-0.960	-2.971	0.191	1.940			
Living	-0.075	-0.717	-1.690	0.020	0.186	0.186		
Together	-0.015	-0.245	-0.109	0.004	0.101	0.034	0.246	
Volunter	-0.375	3.833	-0.429	-0.035	2.321	-0.240	-0.028	374.817

FITTED RESIDUALS

	Housewrk	Maintnce	Transpor	Personal	Financal	Leisure	Balance	Sex	Age	Educatio
Housewrk	0.047									
Maintnce	-0.004	-0.112								
Transpor	0.355	-0.433	0.045							
Personal	0.017	0.002	0.163	0.006						
Financal	0.585	-0.301	0.147	0.278	0.001					
Leisure	-0.158	0.170	-0.238	0.198	-0.100	0.001				
Balance	0.008	0.231	-0.087	0.031	-0.072	-0.002	-0.000			
Sex	0.022	0.033	0.218	0.007	0.002	-0.012	0.012	0.000		
Age	0.271	0.359	2.436	0.090	-0.629	0.458	-0.011	0.000	-0.000	
Educatio	0.431	-0.288	0.340	0.198	0.117	0.023	-0.092	-0.000	0.010	0.000
Employmt	-0.024	-0.042	0.062	0.014	0.007	0.001	-0.013	-0.000	-0.000	-0.000
Income	-0.032	0.106	-0.042	-0.082	0.009	-0.008	-0.119	0.001	-0.020	-0.000
Hrs.wrkd	0.110	0.310	0.007	0.020	-0.143	0.130	-0.444	-0.002	0.181	0.005
Alone	0.000	0.000	-0.004	0.000	-0.019	-0.003	0.015	-0.000	-0.000	-0.000
Hh.size	-0.000	-0.001	-0.009	-0.000	-0.043	-0.071	0.070	0.000	0.000	-0.002
Living	0.000	-0.000	-0.004	0.000	-0.025	-0.001	0.006	0.000	-0.000	0.000
Together	0.000	0.000	0.002	0.000	-0.001	0.009	0.023	0.000	-0.000	0.001
Volunter	3.754	5.174	4.219	2.878	0.028	-0.036	0.318	-0.000	0.008	0.000

FITTED RESIDUALS

	Employmt	Income	Hrs.wrkd	Alone	Hh.size	Living	Together	Volunter
Employmt	0.000							
Income	-0.000	0.004						
Hrs.wrkd	0.001	-0.014	0.022					
Alone	-0.000	0.000	0.000	0.000				
Hh.size	0.000	0.005	-0.020	-0.000	0.000			
Living	-0.000	0.001	0.000	-0.000	0.000	0.000		
Together	0.000	-0.001	0.005	-0.000	-0.000	-0.000	-0.000	
Volunter	0.000	0.025	-0.028	0.000	0.001	0.001	-0.000	-0.000

NORMALIZED RESIDUALS

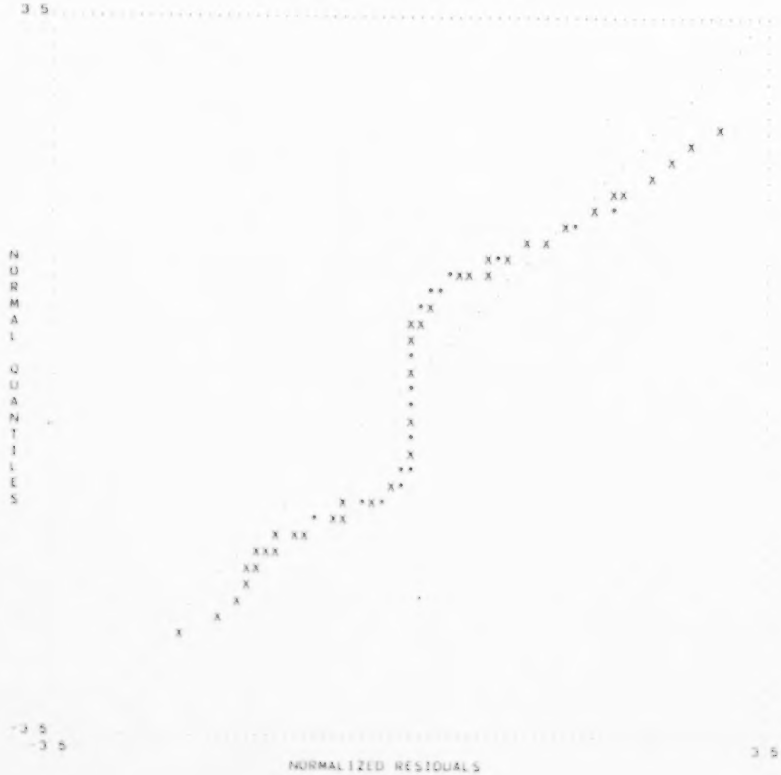
	Housewrk	Maintnce	Transpor	Personal	Financal	Leisure	Balance	Sex	Age	Educatio
Housewrk	0.038									
Maintnce	-0.004	-0.073								
Transpor	0.265	-0.287	0.016							
Personal	0.033	0.003	0.201	0.014						
Financal	1.974	-0.911	0.324	1.537	0.009					
Leisure	-0.997	0.964	-0.988	2.053	-1.858	0.019				
Balance	0.062	1.563	-0.431	0.383	-1.583	-0.079	-0.001			
Sex	0.366	0.492	2.362	0.195	0.114	-1.121	1.321	0.000		
Age	0.194	0.232	1.144	0.105	-1.322	1.807	-0.054	0.001	-0.000	
Educatio	1.124	-0.672	0.582	0.844	0.890	0.326	-1.568	-0.014	0.017	0.001
Employmt	-0.419	-0.658	0.711	0.403	0.341	0.107	-1.471	-0.000	-0.005	-0.002
Income	-0.063	0.186	-0.054	-0.263	0.051	-0.088	-1.513	0.026	-0.023	-0.001
Hrs wrkd	0.049	0.123	0.002	0.015	-0.186	0.312	-1.279	-0.013	0.050	0.005
Alone	0.001	0.001	-0.085	0.001	-1.656	-0.503	3.006	-0.000	-0.000	-0.000
HH.size	-0.001	-0.003	-0.036	-0.001	-0.742	-2.308	2.697	0.001	0.000	-0.021
Living	0.004	-0.001	-0.054	0.001	-1.426	-0.116	0.762	0.005	-0.000	0.001
Together	0.006	0.005	0.025	0.003	-0.037	0.862	2.557	0.002	-0.002	0.020
Volunter	1.603	1.983	1.181	2.011	0.035	-0.085	0.886	-0.000	0.002	0.000

NORMALIZED RESIDUALS

	Employmt	Income	Hrs.wrkd	Alone	HH.size	Living	Together	Volunter
Employmt	0.000							
Income	-0.001	0.010						
Hrs.wrkd	0.004	-0.009	0.003					
Alone	-0.001	0.019	0.000	0.000				
HH.size	0.000	0.054	-0.046	-0.000	0.000			
Living	-0.000	0.016	0.001	-0.000	0.002	0.000		
Together	0.003	-0.033	0.032	-0.004	-0.002	-0.005	-0.000	
Volunter	0.000	0.018	-0.005	0.000	0.002	0.005	-0.001	-0.000

Title G C GERMAIN - Thesis Run 1

QPLOT OF NORMALIZED RESIDUALS



Title G C GERMAIN - Thesis Run 1

TOTAL EFFECTS

TOTAL EFFECTS OF KSI ON ETA

	KSI 1	KSI 2	KSI 3	KSI 4	KSI 5	KSI 6	KSI 7	KSI 8	KSI 9	KSI 10
ETA 1	1.233	-0.018	0.000	0.000	-0.108	0.013	-0.626	-0.146	-1.915	0.071
ETA 2	-1.088	-0.054	0.000	0.000	-0.006	0.015	-0.657	-0.102	-2.901	0.494
ETA 3	0.000	0.000	0.000	0.000	-0.031	-0.022	1.739	-0.328	-3.384	-0.341
ETA 4	0.228	0.023	0.000	0.000	-0.025	-0.003	0.038	-0.113	-0.251	-0.151
ETA 5	0.257	0.000	0.000	0.000	0.046	0.000	0.000	0.000	0.000	-0.226
ETA 6	0.502	-0.049	0.000	0.000	-0.147	0.003	0.494	-0.689	-8.451	-0.041
ETA 7	0.001	-0.000	-0.050	0.000	0.053	-0.018	-0.032	-0.001	0.316	-0.000

TOTAL EFFECTS OF KSI ON ETA

	KSI 11
ETA 1	0.000
ETA 2	0.000
ETA 3	0.000
ETA 4	0.000
ETA 5	0.000
ETA 6	0.000
ETA 7	0.000

TOTAL EFFECTS OF KSI ON Y

	KSI 1	KSI 2	KSI 3	KSI 4	KSI 5	KSI 6	KSI 7	KSI 8	KSI 9	KSI 10
Housewrk	1.233	-0.018	0.000	0.000	-0.108	0.013	-0.626	-0.146	-1.915	0.071
Maintnce	-1.088	-0.054	0.000	0.000	-0.006	0.015	-0.657	-0.102	-2.901	0.494
Transpor	0.000	0.000	0.000	0.000	-0.031	-0.022	1.739	-0.328	-3.384	-0.341
Personal	0.228	0.023	0.000	0.000	-0.025	-0.003	0.038	-0.113	-0.251	-0.151
Financal	0.257	0.000	0.000	0.000	0.046	0.000	0.000	0.000	0.000	-0.226
Leisure	0.001	-0.000	-0.050	0.000	0.053	-0.018	-0.032	-0.001	0.316	-0.000
Balance	0.000	-0.000	-0.026	0.000	0.027	-0.009	-0.016	-0.000	0.161	-0.000

TOTAL EFFECTS OF KSI ON Y

	KSI 11
Housewrk	0.000
Maintnce	0.000
Transpor	0.000
Personal	0.000
Financal	0.000
Leisure	0.000
Balance	0.000

TOTAL EFFECTS OF ETA ON ETA

	ETA 1	ETA 2	ETA 3	ETA 4	ETA 5	ETA 6	ETA 7
ETA 1	0.000	0.000	0.000	0.000	0.000	0.000	0.000
ETA 2	0.000	0.000	0.000	0.000	0.000	0.000	0.000
ETA 3	0.000	0.000	0.000	0.000	0.000	0.000	0.000
ETA 4	0.000	0.000	0.000	0.000	0.000	0.000	0.000
ETA 5	0.000	0.000	0.000	0.000	0.000	0.000	0.000
ETA 6	1.000	1.000	1.000	1.000	0.500	0.000	0.000
ETA 7	0.001	0.001	0.001	0.001	0.001	0.001	0.000

LARGEST EIGENVALUE OF (I-BETA)*(I-BETA)-TRANSPOSED (STABILITY INDEX) IS 4.250

TOTAL EFFECTS OF ETA ON Y

	ETA 1	ETA 2	ETA 3	ETA 4	ETA 5	ETA 6	ETA 7
Housewrk	1.000	0.000	0.000	0.000	0.000	0.000	0.000
Maintnce	0.000	1.000	0.000	0.000	0.000	0.000	0.000
Transpor	0.000	0.000	1.000	0.000	0.000	0.000	0.000
Personal	0.000	0.000	0.000	1.000	0.000	0.000	0.000
Financal	0.000	0.000	0.000	0.000	1.000	0.000	0.000
Leisure	0.001	0.001	0.001	0.001	0.001	0.001	1.000
Balance	0.001	0.001	0.001	0.001	0.000	0.001	0.509

Title G C GERMAIN - Thesis Run 1

VARIANCES AND COVARIANCES

ETA - ETA

	ETA 1	ETA 2	ETA 3	ETA 4	ETA 5	ETA 6	ETA 7
ETA 1	46.310						
ETA 2	11.187	57.529					
ETA 3	13.203	18.766	107.796				
ETA 4	3.467	2.618	4.459	17.292			
ETA 5	0.062	0.020	1.479	0.047	5.401		
ETA 6	74.200	90.111	144.965	27.860	4.308	339.290	
ETA 7	-0.030	-0.153	0.053	0.029	-0.016	-0.110	1.366

ETA - KSI

	KSI 1	KSI 2	KSI 3	KSI 4	KSI 5	KSI 6	KSI 7	KSI 8	KSI 9	KSI 10
ETA 1	0.366	1.268	0.354	0.020	-0.714	-1.475	-0.096	-0.652	-0.303	-0.003
ETA 2	-0.284	-0.016	1.027	0.309	2.618	12.419	-0.125	-0.724	-0.419	0.119
ETA 3	0.144	8.964	0.683	0.111	1.114	-2.187	0.007	-0.866	-0.601	-0.211
ETA 4	0.089	3.572	0.062	0.003	0.048	-1.635	-0.024	-0.291	-0.110	-0.097
ETA 5	0.029	1.309	0.231	0.050	0.552	1.406	-0.004	-0.068	-0.043	-0.064
ETA 6	0.330	14.442	2.242	0.468	3.341	7.825	-0.240	-2.566	-1.454	-0.224
ETA 7	0.012	-0.315	-0.555	-0.082	-0.539	-4.343	0.007	0.083	0.066	-0.001

ETA - KSI

	KSI 11
ETA 1	-0.089
ETA 2	-0.745
ETA 3	-0.109
ETA 4	0.119
ETA 5	0.274
ETA 6	-0.687
ETA 7	-0.274

Y - ETA

	ETA 1	ETA 2	ETA 3	ETA 4	ETA 5	ETA 6	ETA 7
Housewrk	46.310	11.187	13.203	3.467	0.062	74.200	-0.030
Maintnce	11.187	57.529	18.766	2.618	0.020	90.111	-0.153
Transpor	13.203	18.766	107.796	4.459	1.479	144.965	0.053
Personal	3.467	2.618	4.459	17.292	0.047	27.860	0.029
Financal	0.062	0.020	1.479	0.047	5.401	4.308	-0.016
Leisure	-0.030	-0.153	0.053	0.029	-0.016	-0.110	1.366
Balance	-0.015	-0.078	0.027	0.015	-0.008	-0.056	0.695

Y - KSI

	KSI 1	KSI 2	KSI 3	KSI 4	KSI 5	KSI 6	KSI 7	KSI 8	KSI 9	KSI 10
Housewrk	0.366	1.268	0.354	0.020	-0.714	-1.475	-0.096	-0.652	-0.303	-0.003
Maintnce	-0.284	-0.016	1.027	0.309	2.618	12.419	-0.125	-0.724	-0.419	0.119
Transpor	0.144	8.964	0.683	0.111	1.114	-2.187	0.007	-0.866	-0.601	-0.211
Personal	0.089	3.572	0.062	0.003	0.048	-1.635	-0.024	-0.291	-0.110	-0.097
Financal	0.029	1.309	0.231	0.050	0.552	1.406	-0.004	-0.068	-0.043	-0.064
Leisure	0.012	-0.315	-0.555	-0.082	-0.539	-4.343	0.007	0.083	0.066	-0.001
Balance	0.006	-0.160	-0.283	-0.042	-0.274	-2.211	0.004	0.042	0.034	-0.000

Y - KSI

	KSI 11
Housewrk	-0.089
Maintnce	-0.745
Transpor	-0.109
Personal	0.119
Financal	0.274
Leisure	-0.274
Balance	-0.140

X - ETA

	ETA 1	ETA 2	ETA 3	ETA 4	ETA 5	ETA 6	ETA 7
Sex	0.366	-0.284	0.144	0.089	0.029	0.330	0.012
Age	1.268	-0.016	8.964	3.572	1.309	14.442	-0.315
Educatio	0.354	1.027	0.683	0.062	0.231	2.242	-0.555
Employmt	0.020	0.309	0.111	0.003	0.050	0.468	-0.082
Income	-0.714	2.618	1.114	0.048	0.552	3.341	-0.539
Hrs wrkd	-1.475	12.419	-2.187	-1.635	1.406	7.825	-4.343
Alone	-0.096	-0.125	0.007	-0.024	-0.004	-0.240	0.007
Hh size	-0.652	-0.724	-0.866	-0.291	-0.068	-2.566	0.083
Living	-0.303	-0.419	-0.601	-0.110	-0.043	-1.454	0.066
Together	-0.003	0.119	-0.211	-0.097	-0.064	-0.224	-0.001
Volunter	-0.089	-0.745	-0.109	0.119	0.274	-0.687	-0.274

X - KSI

	KSI 1	KSI 2	KSI 3	KSI 4	KSI 5	KSI 6	KSI 7	KSI 8	KSI 9	KSI 10
Sex	0.247	0.051	0.019	-0.053	-0.759	-3.157	0.005	-0.006	-0.012	-0.001
Age	0.051	125.947	3.537	1.192	17.933	15.154	-0.165	-2.217	-2.567	-2.125
Educatio	0.019	3.537	9.048	0.422	5.018	14.849	-0.065	-0.576	-0.323	0.012
Employmt	-0.053	1.192	0.422	0.213	1.315	5.977	-0.013	-0.143	-0.075	-0.015
Income	-0.759	17.933	5.018	1.315	15.177	48.103	-0.106	-0.960	-0.717	-0.245
Hrs wrkd	-3.157	15.154	14.849	5.977	48.103	312.783	-0.320	-2.971	-1.690	-0.109
Alone	0.005	-0.165	-0.065	-0.013	-0.106	-0.320	0.074	0.191	0.020	0.004
Hh size	-0.006	-2.217	-0.576	-0.143	-0.960	-2.971	0.191	1.921	0.186	0.101
Living	-0.012	-2.567	-0.323	-0.075	-0.717	-1.690	0.020	0.186	0.184	0.034
Together	-0.001	-2.125	0.012	-0.015	-0.245	-0.109	0.004	0.101	0.034	0.234
Volunter	0.365	14.586	9.063	-0.375	3.833	-0.429	-0.035	2.321	-0.240	-0.028

X - KSI

	KSI 11
Sex	0.365
Age	14.586
Educatio	9.063
Employmt	-0.375
Income	3.833
Hrs wrkd	-0.429
Alone	-0.035
Hh size	2.321
Living	-0.240
Together	-0.028
Volunter	337.336

Title G C GERMAIN - Thesis Run 1

FIRST ORDER DERIVATIVES

LAMBDA Y

	ETA 1	ETA 2	ETA 3	ETA 4	ETA 5	ETA 6	ETA 7
Housewrk	-0.000	0.000	-0.003	0.000	-0.010	-0.007	0.003
Maintnce	-0.000	0.000	0.002	0.000	0.008	0.006	-0.003
Transpor	-0.002	0.003	-0.000	-0.001	-0.001	0.000	0.002
Personal	-0.000	0.000	-0.003	0.000	-0.013	-0.009	-0.008
Financal	-0.087	0.041	-0.015	-0.042	-0.000	-0.103	0.013
Leisure	0.105	-0.024	0.125	-0.134	0.038	0.091	0.000
Balance	-0.074	-0.153	-0.014	0.046	0.030	-0.179	-0.000

LAMBDA X

	KSI 1	KSI 2	KSI 3	KSI 4	KSI 5	KSI 6	KSI 7	KSI 8	KSI 9	KSI 10
Sex	-0.000	0.025	0.023	0.001	-0.000	-0.001	-0.001	-0.002	-0.001	-0.000
Age	-0.000	-0.000	0.000	0.000	-0.000	-0.000	0.000	0.000	0.000	0.000
Educatio	0.000	-0.012	-0.000	0.000	-0.000	-0.000	0.000	0.002	0.000	-0.000
Employmt	0.000	0.000	-0.000	-0.000	-0.000	-0.000	-0.000	-0.000	-0.000	-0.000
Income	-0.000	0.007	-0.000	0.000	-0.000	-0.000	-0.000	-0.002	-0.000	0.000
Hrs wrkd	0.000	-0.005	-0.000	-0.000	-0.000	0.000	0.000	0.001	0.000	-0.000
Alone	0.003	0.028	0.004	0.002	-0.000	0.000	0.000	0.001	0.000	-0.000
Hh size	-0.001	-0.007	-0.002	-0.000	0.000	0.000	-0.000	-0.000	-0.000	-0.000
Living	-0.008	0.007	-0.008	0.001	0.000	0.000	0.000	-0.010	-0.000	0.002
Together	-0.001	0.015	-0.009	-0.001	0.000	0.001	0.001	0.002	0.001	0.000
Volunter	-0.000	0.000	-0.000	-0.000	0.000	-0.000	0.000	-0.000	0.000	0.000

LAMBDA X

	KSI 11
Sex	0.019
Age	-0.001
Educatio	-0.000
Employmt	0.000
Income	-0.009
Hrs wrkd	0.001
Alone	-0.035
Hh size	-0.031
Living	-0.335
Together	0.008
Volunter	0.000

BETA

	ETA 1	ETA 2	ETA 3	ETA 4	ETA 5	ETA 6	ETA 7
ETA 1	-0.000	-0.000	-0.002	0.000	-0.010	-0.007	0.003
ETA 2	0.000	0.000	0.002	0.000	0.008	0.006	-0.003
ETA 3	-0.002	0.003	0.000	-0.001	-0.000	0.000	0.002
ETA 4	0.000	0.000	-0.003	0.000	-0.013	-0.009	-0.008
ETA 5	-0.087	0.041	-0.015	-0.042	-0.000	-0.103	0.013
ETA 6	0.000	-0.000	0.000	-0.000	0.000	-0.000	0.000
ETA 7	0.068	-0.102	0.118	-0.110	0.053	-0.000	0.000

GAMMA

	KSI 1	KSI 2	KSI 3	KSI 4	KSI 5	KSI 6	KSI 7	KSI 8	KSI 9	KSI 10
ETA 1	-0.000	-0.000	-0.008	0.000	0.000	-0.000	0.000	0.000	0.000	-0.000
ETA 2	0.000	-0.000	0.006	0.001	-0.000	0.000	0.000	-0.000	-0.000	-0.000
ETA 3	-0.002	-0.020	-0.002	-0.001	-0.000	-0.000	-0.000	-0.000	-0.000	0.000
ETA 4	0.000	0.000	-0.008	-0.001	0.000	0.000	0.000	-0.000	0.000	0.000
ETA 5	-0.000	0.097	-0.018	-0.001	0.000	0.005	0.003	0.007	0.004	-0.000
ETA 6	0.000	-0.000	-0.000	0.000	0.000	-0.000	-0.000	0.000	0.000	-0.000
ETA 7	0.006	-0.230	-0.000	0.001	0.000	-0.000	-0.000	0.032	0.000	-0.007

GAMMA

	KSI 11
ETA 1	-0.045
ETA 2	-0.058
ETA 3	-0.015
ETA 4	-0.117
ETA 5	-0.001
ETA 6	0.000
ETA 7	0.000

PHI

	KSI 1	KSI 2	KSI 3	KSI 4	KSI 5	KSI 6	KSI 7	KSI 8	KSI 9	KSI 10
KSI 1	0.000									
KSI 2	-0.000	-0.000								
KSI 3	-0.000	-0.000	0.000							
KSI 4	-0.000	0.000	-0.000	-0.000						
KSI 5	-0.000	-0.000	-0.000	-0.000	0.000					
KSI 6	0.000	-0.000	0.000	-0.000	-0.000	0.000				
KSI 7	-0.000	0.000	0.000	0.000	-0.000	0.000	0.000			
KSI 8	0.000	0.000	0.000	-0.000	0.000	0.000	-0.000	-0.000		
KSI 9	-0.000	-0.000	-0.000	-0.000	-0.000	0.000	0.000	-0.000	-0.000	
KSI 10	-0.000	0.000	0.000	0.000	-0.000	0.000	0.000	-0.000	0.000	0.000
KSI 11	0.000	-0.000	-0.000	0.000	0.000	-0.000	0.000	-0.000	0.000	0.000

PHI

	KSI 11
KSI 11	0.000

PSI

	ETA 1	ETA 2	ETA 3	ETA 4	ETA 5	ETA 6	ETA 7
ETA 1	-0.000						
ETA 2	-0.000	0.000					
ETA 3	-0.000	0.000	0.000				
ETA 4	0.000	0.000	0.000	0.000			
ETA 5	-0.002	0.002	-0.000	-0.002	-0.000		
ETA 6	0.000	-0.000	0.000	-0.000	0.000	-0.000	
ETA 7	0.002	-0.002	0.001	-0.006	0.009	-0.000	-0.000

THETA EPS

	Housewrk	Maintnce	Transpor	Personal	Financal	Leisure	Balance
Housewrk	-0.000						
Maintnce	0.000	0.000					
Transpor	-0.000	0.000	-0.000				
Personal	0.000	0.000	0.000	0.000			
Financal	-0.002	0.002	-0.000	-0.002	-0.000		
Leisure	0.003	-0.001	0.001	-0.008	0.007	-0.007	
Balance	-0.001	-0.004	0.000	0.003	0.004	0.007	0.000

THETA DELTA

	Sex	Age	Educatio	Employmt	Income	Hrs.wrkd	Alone	HH size	Living	Together
Sex	-0.013									
Age	-0.001	0.000								
Educatio	0.005	-0.000	-0.000							
Employmt	0.008	0.001	0.000	-0.000						
Income	-0.004	0.000	0.000	-0.000	-0.001					
Hrs.wrkd	0.000	-0.000	-0.000	-0.000	0.000	-0.000				
Alone	0.005	0.000	-0.003	0.021	0.001	-0.001	-0.010			
HH size	-0.001	-0.000	0.001	-0.002	-0.001	0.000	0.002	0.000		
Living	-0.051	0.001	-0.001	0.006	-0.003	-0.001	0.031	-0.009	-0.003	
Together	-0.003	0.000	-0.004	-0.010	0.004	-0.001	0.011	-0.002	0.023	0.004
Volunter	-0.000	-0.000	-0.000	-0.000	-0.000	0.000	-0.000	-0.000	-0.001	0.000

THETA DELTA

	Volunter
Volunter	0.000

Title G C GERMAIN - Thesis Run 1

FACTOR SCORES REGRESSIONS

ETA

	Housewrk	Maintnce	Transpor	Personal	Financal	Leisure	Balance	Sex	Age	Educatio
ETA 1	0.891	0.016	0.008	0.014	-0.002	0.003	0.001	0.153	-0.002	-0.001
ETA 2	0.019	0.889	0.014	0.009	-0.003	0.004	0.001	-0.147	-0.005	0.001
ETA 3	0.019	0.027	0.891	0.016	0.025	0.009	0.002	0.001	0.002	0.000
ETA 4	0.005	0.003	0.003	0.897	-0.001	0.001	0.000	0.022	0.002	-0.000
ETA 5	-0.000	-0.000	0.001	-0.000	0.899	0.000	0.000	0.022	0.000	0.000
ETA 6	0.935	0.935	0.917	0.936	0.468	0.017	0.003	0.040	-0.003	-0.000
ETA 7	0.000	0.000	0.000	0.000	0.000	0.730	0.149	-0.005	0.001	-0.008

ETA

	Employmt	Income	Hrs wrkd	Alone	HH size	Living	Together	Volunter
ETA 1	-0.006	-0.007	0.001	-0.072	-0.010	-0.125	0.005	-0.000
ETA 2	0.011	0.001	0.002	-0.086	-0.003	-0.225	0.059	-0.000
ETA 3	-0.014	-0.002	-0.002	0.215	-0.028	-0.248	-0.042	-0.000
ETA 4	-0.003	-0.001	-0.000	0.005	-0.010	-0.002	-0.017	-0.000
ETA 5	0.005	0.003	0.000	-0.002	0.000	0.001	-0.021	0.000
ETA 6	-0.010	-0.007	-0.000	0.061	-0.051	-0.600	-0.006	-0.000
ETA 7	-0.004	0.005	-0.003	-0.007	0.000	0.060	-0.000	0.000

KSI

	Housewrk	Maintnce	Transpor	Personal	Financal	Leisure	Balance	Sex	Age	Educatio
KSI 1	0.000	-0.000	0.000	0.000	0.000	-0.000	-0.000	0.987	0.000	0.000
KSI 2	-0.002	-0.006	0.001	0.008	0.002	0.010	0.002	0.082	0.914	-0.024
KSI 3	-0.000	0.000	0.000	-0.000	0.001	-0.023	-0.005	0.124	-0.004	0.874
KSI 4	-0.000	0.000	-0.000	-0.000	0.000	-0.000	-0.000	0.005	-0.000	0.000
KSI 5	-0.003	0.001	-0.000	-0.001	0.012	0.038	0.008	-0.708	0.032	0.098
KSI 6	0.006	0.008	-0.007	-0.005	0.008	-0.255	-0.052	-1.011	-0.049	0.015
KSI 7	-0.000	-0.000	0.000	0.000	-0.000	-0.000	-0.000	0.000	0.000	-0.000
KSI 8	-0.000	-0.000	-0.000	-0.000	0.000	0.000	0.000	-0.001	0.000	-0.000
KSI 9	-0.000	-0.000	-0.000	-0.000	0.000	0.000	0.000	-0.002	-0.000	-0.000
KSI 10	0.000	0.000	-0.000	-0.000	-0.000	-0.000	-0.000	0.000	-0.001	0.000
KSI 11	-0.000	-0.000	-0.000	-0.000	0.001	0.001	0.000	0.166	0.012	0.103

KSI

	Employmt	Income	Hrs wrkd	Alone	HH size	Living	Together	Volunter
KSI 1	0.001	-0.001	-0.000	0.001	-0.000	-0.003	0.000	0.000
KSI 2	-0.014	0.080	-0.009	0.053	0.029	-0.954	-0.541	0.002
KSI 3	0.018	0.037	0.000	-0.001	-0.017	-0.086	0.032	0.003
KSI 4	0.881	0.005	0.001	0.002	-0.003	-0.015	0.001	-0.000
KSI 5	1.099	0.606	0.023	-0.008	0.011	-0.327	-0.001	0.002
KSI 6	4.191	0.292	0.777	0.072	0.048	0.133	-0.027	0.003
KSI 7	0.000	-0.000	0.000	0.986	0.001	0.000	-0.000	-0.000
KSI 8	-0.005	0.000	0.000	0.035	0.985	0.009	0.005	0.000
KSI 9	-0.003	-0.000	0.000	0.001	0.001	0.982	-0.001	-0.000
KSI 10	0.001	-0.000	-0.000	-0.005	0.003	-0.004	0.941	0.000
KSI 11	-0.552	0.028	0.003	-0.494	0.198	-0.011	0.013	0.895

Title G C GERMAIN - Thesis Run 1

STANDARDIZED SOLUTION

LAMBDA Y

	ETA 1	ETA 2	ETA 3	ETA 4	ETA 5	ETA 6	ETA 7
Housewrk	6.805	0.000	0.000	0.000	0.000	0.000	0.000
Maintnce	0.000	7.585	0.000	0.000	0.000	0.000	0.000
Transpor	0.000	0.000	10.382	0.000	0.000	0.000	0.000
Personal	0.000	0.000	0.000	4.158	0.000	0.000	0.000
Financal	0.000	0.000	0.000	0.000	2.324	0.000	0.000
Leisure	0.000	0.000	0.000	0.000	0.000	0.000	1.169
Balance	0.000	0.000	0.000	0.000	0.000	0.000	0.595

LAMBDA X

	KSI 1	KSI 2	KSI 3	KSI 4	KSI 5	KSI 6	KSI 7	KSI 8	KSI 9	KSI 10
Sex	0.497	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Age	0.000	11.223	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Educatio	0.000	0.000	3.008	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Employmt	0.000	0.000	0.000	0.462	0.000	0.000	0.000	0.000	0.000	0.000
Income	0.000	0.000	0.000	0.000	3.896	0.000	0.000	0.000	0.000	0.000
Hrs.wrkd	0.000	0.000	0.000	0.000	0.000	17.686	0.000	0.000	0.000	0.000
Alone	0.000	0.000	0.000	0.000	0.000	0.000	0.272	0.000	0.000	0.000
HH.size	0.000	0.000	0.000	0.000	0.000	0.000	0.000	1.386	0.000	0.000
Living	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.429	0.000
Together	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.483
Volunter	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000

LAMBDA X

	KSI 11
Sex	0.000
Age	0.000
Educatio	0.000
Employmt	0.000
Income	0.000
Hrs.wrkd	0.000
Alone	0.000
HH.size	0.000
Living	0.000
Together	0.000
Volunter	18.367

BETA

	ETA 1	ETA 2	ETA 3	ETA 4	ETA 5	ETA 6	ETA 7
ETA 1	0.000	0.000	0.000	0.000	0.000	0.000	0.000
ETA 2	0.000	0.000	0.000	0.000	0.000	0.000	0.000
ETA 3	0.000	0.000	0.000	0.000	0.000	0.000	0.000
ETA 4	0.000	0.000	0.000	0.000	0.000	0.000	0.000
ETA 5	0.000	0.000	0.000	0.000	0.000	0.000	0.000
ETA 6	0.369	0.412	0.564	0.226	0.063	0.000	0.000
ETA 7	0.000	0.000	0.000	0.000	0.000	0.020	0.000

GAMMA

	KSI 1	KSI 2	KSI 3	KSI 4	KSI 5	KSI 6	KSI 7	KSI 8	KSI 9	KSI 10
ETA 1	0.090	-0.029	0.000	0.000	-0.062	0.033	-0.025	-0.030	-0.121	0.005
ETA 2	-0.071	-0.080	0.000	0.000	-0.003	0.035	-0.024	-0.019	-0.164	0.031
ETA 3	0.000	0.000	0.000	0.000	-0.012	-0.037	0.046	-0.044	-0.140	-0.016
ETA 4	0.027	0.061	0.000	0.000	-0.023	-0.011	0.002	-0.038	-0.026	-0.018
ETA 5	0.055	0.000	0.000	0.000	0.076	0.000	0.000	0.000	0.000	-0.047
ETA 6	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
ETA 7	0.000	0.000	-0.129	0.000	0.176	-0.271	-0.008	0.000	0.120	0.000

GAMMA

	KSI 11
ETA 1	0.000
ETA 2	0.000
ETA 3	0.000
ETA 4	0.000
ETA 5	0.000
ETA 6	0.000
ETA 7	0.002

PHI

	KSI 1	KSI 2	KSI 3	KSI 4	KSI 5	KSI 6	KSI 7	KSI 8	KSI 9	KSI 10
KSI 1	1.000									
KSI 2	0.009	1.000								
KSI 3	0.013	0.105	1.000							
KSI 4	-0.231	0.230	0.304	1.000						
KSI 5	-0.392	0.410	0.428	0.731	1.000					
KSI 6	-0.359	0.076	0.279	0.732	0.698	1.000				
KSI 7	0.036	-0.054	-0.079	-0.107	-0.100	-0.067	1.000			
KSI 8	-0.008	-0.143	-0.138	-0.223	-0.178	-0.121	0.507	1.000		
KSI 9	-0.056	-0.533	-0.250	-0.379	-0.429	-0.223	0.172	0.313	1.000	
KSI 10	-0.003	-0.392	0.008	-0.068	-0.130	-0.013	0.028	0.150	0.164	1.000
KSI 11	0.040	0.071	0.164	-0.044	0.054	-0.001	-0.007	0.091	-0.030	-0.003

PHI

	KSI 11
KSI 11	1.000

PSI

	ETA 1	ETA 2	ETA 3	ETA 4	ETA 5	ETA 6	ETA 7
ETA 1	0.974						
ETA 2	0.207	0.967					
ETA 3	0.171	0.225	0.978				
ETA 4	0.113	0.083	0.092	0.990			
ETA 5	0.000	0.000	0.056	0.000	0.991		
ETA 6	0.000	0.000	0.000	0.000	0.000	0.000	
ETA 7	0.000	0.000	0.000	0.000	0.000	0.000	0.928

CORRELATION MATRIX FOR ETA

	ETA 1	ETA 2	ETA 3	ETA 4	ETA 5	ETA 6	ETA 7
ETA 1	1.000						
ETA 2	0.217	1.000					
ETA 3	0.187	0.238	1.000				
ETA 4	0.123	0.083	0.103	1.000			
ETA 5	0.004	0.001	0.061	0.005	1.000		
ETA 6	0.592	0.645	0.758	0.364	0.101	1.000	
ETA 7	-0.004	-0.017	0.004	0.006	-0.006	-0.005	1.000

REGRESSION MATRIX ETA ON KSI (STANDARDIZED)

	KSI 1	KSI 2	KSI 3	KSI 4	KSI 5	KSI 6	KSI 7	KSI 8	KSI 9	KSI 10
ETA 1	0.090	-0.029	0.000	0.000	-0.062	0.033	-0.025	-0.030	-0.121	0.005
ETA 2	-0.071	-0.080	0.000	0.000	-0.003	0.035	-0.024	-0.019	-0.164	0.031
ETA 3	0.000	0.000	0.000	0.000	-0.012	-0.037	0.046	-0.044	-0.140	-0.016
ETA 4	0.027	0.061	0.000	0.000	-0.023	-0.011	0.002	-0.038	-0.026	-0.018
ETA 5	0.055	0.000	0.000	0.000	0.076	0.000	0.000	0.000	0.000	-0.047
ETA 6	0.014	-0.030	0.000	0.000	-0.031	0.003	0.007	-0.052	-0.197	-0.001
ETA 7	0.000	-0.001	-0.129	0.000	0.175	-0.271	-0.008	-0.001	0.116	-0.000

REGRESSION MATRIX ETA ON KSI (STANDARDIZED)

	KSI 11
ETA 1	0.000
ETA 2	0.000
ETA 3	0.000
ETA 4	0.000
ETA 5	0.000
ETA 6	0.000
ETA 7	0.002

THE PROBLEM REQUIRED 18006 DOUBLE PRECISION WORDS.
THE CPU-TIME WAS 61.52 SECONDS

PRECEDING TASK REQUIRED 61.80 SECONDS CPU TIME; 98.84 SECONDS ELAPSED.

```
  80  0

    80 COMMAND LINES READ.
     0 ERRORS DETECTED.
     0 WARNINGS ISSUED.
    62 SECONDS CPU TIME.
   102 SECONDS ELAPSED TIME.
       END OF JOB.

   .
```